

BULLETIN  
**Pennsylvania Department of Agriculture**  
HARRISBURG

Vol. 9

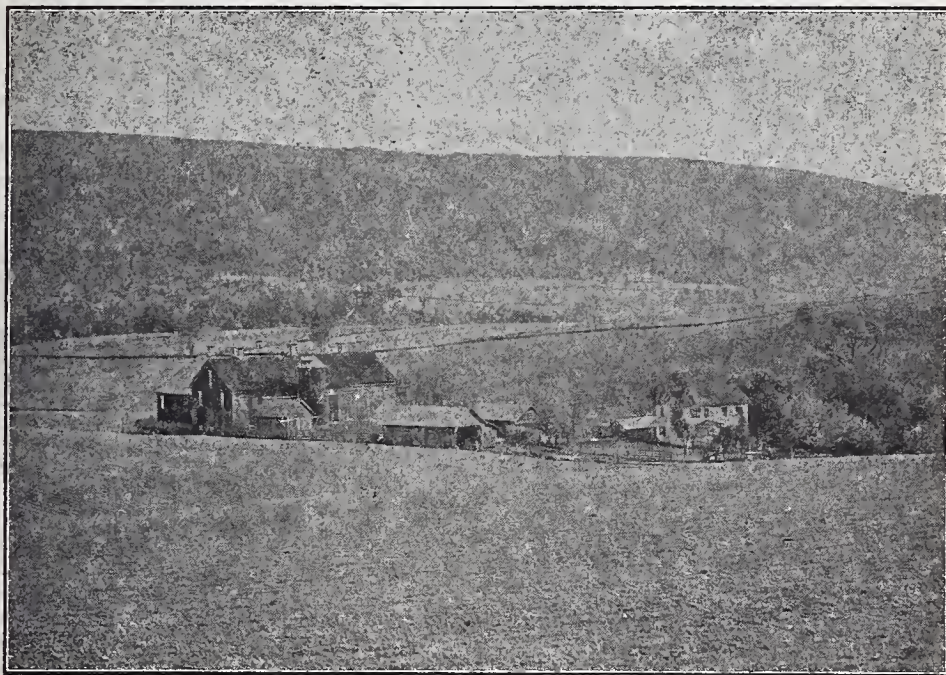
May 1, 1926

No. 9

General Bulletin No. 427

**How the State  
Department of Agriculture  
Serves Pennsylvania**

ANNUAL REPORT, 1925



**Rural Pennsylvania**

F. P. WILLITS, *Secretary of Agriculture*

GEO. F. JOHNSON, *Editor*

Published semi-monthly by direction of the Secretary. Entered as second class matter, March 22, 1918, at the Post Office at Harrisburg, Pa., under the Act of June 6, 1900. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized on June 29, 1918.



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F. P. WILLITS, *Secretary of Agriculture*  
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# PENNSYLVANIA DEPARTMENT OF AGRICULTURE

## Organization and Services

FRANK P. WILLITS, *Secretary* ..... JOHN M. McKEE, *Deputy Secretary*

This Department is essentially a service agency created by legislative enactment to deal with administrative, regulatory, investigational, and educational problems which can best be solved through public rather than individual action. The organization provides for coordination and cooperation with the Pennsylvania State College and the U. S. Department of Agriculture. The Department operates through the following bureaus:

**ANIMAL INDUSTRY:** T. E. MUNCE, *Director and State Veterinarian.*

Prevents and Eradicates transmissible diseases of animals and poultry, including tuberculosis of animals in cooperation with Federal Government.

Demonstrates to veterinarians control methods for transmissible animal diseases: Supervises vaccination for and the prevention of hog cholera, anthrax, black leg and hemorrhagic septicemia;

Protects public from unwholesome meats through ante and post mortem examinations of animals at slaughtering establishments;

Inspects, licenses and furnishes information as to breeding, soundness and conformation of stallions and jacks standing for public service;

Enforces law requiring licensing of dogs and providing for protection of livestock and people from attacks of uncontrolled dogs;

Maintains laboratory for diagnostic research and experimental projects.

**PLANT INDUSTRY:** C. H. HADLEY, *Director.*

Tests agricultural seeds for purity and germination, and enforces State Seed Law;

Inspects orchards, parks, farms, and plant imports for injurious insects and plant diseases;

Inspects and licenses Pennsylvania nurseries, and licenses all dealers in nursery stock;

Enforces laws governing apicultural practices, disease control and housing;

Places and enforces quarantines and carries on eradication campaigns against insect pests and plant diseases;

Inspects and certifies potatoes for seed purposes;

Makes investigations for the control of injurious insects and plant diseases including field tests of insecticides, fungicides and weed killers;

Maintains collections of insects, plant diseases, plants, and seeds, and identifies specimens.

**FOODS AND CHEMISTRY:** JAMES W. KELLOGG, *Director—Chief Chemist.*

Accomplishes its purpose of protecting Pennsylvania homes against harmful foodstuffs by sampling, analyzing, and bringing prosecution under the laws relating to foods and non-alcoholic drinks, including milk, cream, butter, ice-cream, eggs, sausage, fresh meats, soft drinks, fruit syrups, vinegar and kindred food products;

Regulates and issues licenses for the manufacture and sale of oleomargarine;

Licenses and regulates egg-opening plants and cold storage warehouses, maintaining regular inspection and enforcing twelve-month storage limit;

Inspects milk plants and creameries and regulates weighing, testing, buying and selling of milk and cream on a butterfat basis;

Protects honest manufacturers, importers, selling agents and ultimate users of feeding stuffs, fertilizers, lime products, linseed oil, paint, putty, turpentine, insecticides and fungicides, by means of annual registrations followed by inspections, analyses, prosecutions and the publication of the analyses of these products;

Analyzes special samples for residents of the State at the rate of \$1.00 a sample for feeding stuffs, lime products and linseed oils.

**MARKETS:**

P. R. TAYLOR, *Director.*

Investigates and assists in the marketing of farm products; at present chiefly grain and hay, fruits and vegetables, poultry and eggs, and tobacco;

Compiles and distributes daily market information as to supplies, shipments and prices;

Advises growers on transportation of agricultural products;

Assists cooperative associations and public markets;

Establishes standard grades of farm products and maintains inspection.

**STATISTICS:**

L. H. WIBLE, *Director.*

Assembles and disseminates essential statistic and facts pertaining to the agriculture of the State, from monthly reports rendered by hundreds of volunteer crop correspondents, information which assists the producer in his sales and interests all industries which deal with agricultural products;

Cooperates with U. S. Bureau of Agricultural Economics in joint crop and livestock reporting and publishes annual and monthly summaries of the data;

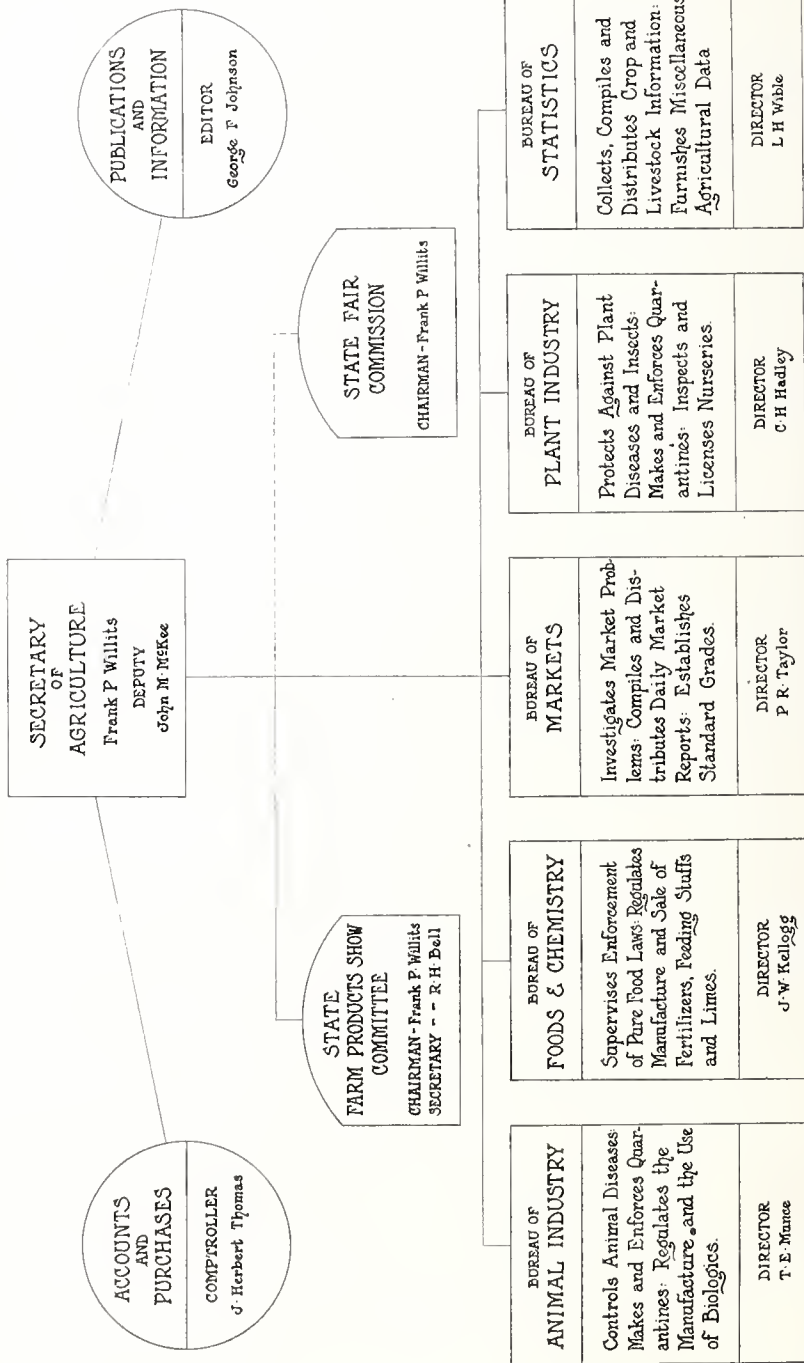
Compiles dates of county and local fairs and assembles data pertaining to their success and results during each year.



## TABLE OF CONTENTS

	Page
Organization Chart .....	6
Pennsylvania Ranks High in Agriculture .....	7
Increased Efficiency in Farming .....	8
Department Organization .....	10
How Department Appropriations are Expended .....	11
State Farm Products Show .....	12
Publications and Information .....	12
Legislation .....	14
Rural Electrification .....	14
Bureau of Animal Industry .....	14
Rapid Progress in Tuberculosis Eradication .....	15
Meat Hygiene Work Protects Public .....	17
Bovine Infectious Abortion Control .....	19
Hog Cholera Losses Reduced .....	19
Serious Transmissible Diseases Controlled .....	20
Progress in Poultry Disease Control .....	21
State Institutions Served by Bureau .....	23
Experimental Farm Studies Under Way .....	24
Dog Law Effectively Enforced .....	25
Bureau of Foods and Chemistry .....	27
Merger of Two Bureaus Increases Efficiency .....	28
Standard of Food Supply Greatly Improved .....	29
Quality of Fertilizer Improves .....	30
Published Reports Have Distinet Value .....	31
New Laws Rigidly Enforced .....	31
Field Agents Always on Job .....	35
Bureau of Markets .....	35
Market Reports Aid Producers and Consumers .....	36
Fruit and Vegetable Marketing .....	37
Progress in Wheat Marketing .....	40
Poultry Marketing Activities .....	42
Cooperative Buying and Selling .....	44
Bureau of Plant Industry .....	46
Apiary Inspection .....	47
Botany Section Enforces Seed Law .....	47
Entomology Section .....	49
Japanese Beetle Quarantine and Control .....	49
European Corn Borer Control .....	52
Oriental Fruit Moth, A Menace .....	54
Mexican Bean Beetle, A New Pest .....	55
Miscellaneous Activities .....	56
Nursery Inspection .....	57
Plant Pathology Section .....	58
Potato Wart Control .....	58
Peach Yellows Infection Greatly Reduced .....	59
Spread of White Pine Blister Rust Checked .....	61
Potato Seed Certification .....	61
Bureau of Statistics .....	62
Monthly Crop Reporting Service .....	62
State Triennial Farm Census .....	62
Reliable Statistics Vital .....	63
Statistical Records Show Trends .....	64
State Has Diversified Agriculture .....	66

ORGANIZATION CHART  
OF THE  
**DEPARTMENT OF AGRICULTURE**  
COMMONWEALTH OF PENNSYLVANIA



# How the State Department of Agriculture Serves Pennsylvania

ANNUAL REPORT, 1925

## PENNSYLVANIA RANKS HIGH IN AGRICULTURE

Agriculture is one of Pennsylvania's major industries. With manufacturing, mining and other industrial enterprises present in all sections of the State, unexcelled markets for farm products result and the close relationship of agriculture to industrial effort has proven mutually beneficial.

**Extent of Agriculture.** The State has 200,443 farms representing a total farm population of approximately 850,000 and land areas of 16,298,000 acres. In 1925, the State produced crops valued at \$300,226,000 on an estimated area of 7,619,000 crop areas, at the same time maintaining livestock valued at 144,688,000. The total valuation of all the farm land, buildings, livestock and equipment was \$1,729,353,034, according to the 1920 Census. The importance of agriculture in Pennsylvania in relation to other industries is readily appreciated when it is known that in 1920 the total invested capital in the mines and quarries in the State was \$780,542,800 and in metals and metal products which includes the steel industry, \$2,110,374,800.

**State Has High Rank.** In 1919, Pennsylvania ranked third among all the states in the value of her dairy products and in 1921, seventh in the value of all farm crops. In 1925, she ranked first in the production of buckwheat, third in potatoes, fourth in tame hay, fifth in grapes, sixth in rye, sixth in tobacco, sixth in apples, seventh in wheat, and twelfth in corn and oats.

**High Crop Yields.** Pennsylvania had the distinction of producing a corn crop in 1925 averaging 51 bushels per acre, the highest average yield per acre since the Civil War and the second highest average yield of any other state for that year. The average yield for the entire United States was 28.5 bushels. The yield of winter wheat was 20 bushels per acre, which places the State among the first ten in yield per acre of this crop. The yield for the entire United States was 12.7 bushels.

**Variety in Cropping.** The situation of the state's farm land permits the cultivation of a great variety of crops. The elevation ranges from practically sea level to over 2000 feet and the seasons from 90 to 180 days. This range makes possible the general cultivation of fruits, vegetables, cereals and grasses. Aside from the farm crops such as corn and oats and dairying, which are found throughout the State, several sections have become well-known for specialized crops,

such as Lancaster County for tobacco; Tioga for celery; Erie for grapes and cabbage; Adams, Franklin and York, for apples; and Washington and Greene for sheep. The section surrounding Philadelphia produces more than 80 per cent of all the mushrooms grown in the United States.

**Numerous Local Markets.** The market problem varies in all phases from local direct marketing such as selling at roadside markets from door to door and at curb markets to the remote form in which products are shipped to large markets. Pennsylvania farmers are particularly fortunate in their numerous local markets. The State has 150 cities of 5,000 to 25,000 population or almost twice as many as any other State. These centers in addition to the large cities give farmers unexcelled, dependable markets for their products. It is estimated that farm products produced in Pennsylvania are within an average distance of 75 miles of their consuming markets.

**Conservative Land Values.** Coupled with accessible and a diversified type of agriculture, Pennsylvania farm land has a conservative valuation. The average value of all farm lands in the State with improvements is estimated at \$77 per acre, and without improvements, \$46 per acre. In other words, the replacement costs

#### PENNSYLVANIA RANKS

**FIRST** in number of "front gate" markets with twice as many cities of 5,000 to 25,000 population as any other State.

**FIRST** in 1925 in producing buckwheat, and mushrooms, **THIRD** in potatoes, **FOURTH** in hay, **FIFTH** in grapes, **SIXTH** in tobacco, all apples and all hay, and **SEVENTH** in wheat and rye.

of improvements almost equals the total value of farm land itself. This conservative valuation eliminates the problem of over-valuation common in certain other agricultural areas. Sufficient capital is likewise available for financing farm operations.

#### INCREASED EFFICIENCY IN FARMING

One of the handicaps in the past has been the shortage of labor but this is being gradually met by the adoption of more efficient methods. A most noticeable change has come about during recent years in the application of scientific principles to the old methods with a resulting increase in productiveness per animal unit, per acre and per man. The combination of scientific ideas with improved machinery has brought about a type of agriculture in Pennsylvania which has fully proven its permanency in the face of increasing competition from other agricultural states.

**More Productive Crops.** Rapid progress is being made in the production of improved varieties of crops. For example, improved varieties of wheat such as Pennsylvania 44, Forward, Red Rock and Leap's Prolific are now being quite generally grown throughout the



wheat sections of the State. In 1919, the Pennsylvania 44 wheat was not even mentioned in the Federal Census while in 1925, it was estimated that 20 per cent of the acreage seeded to wheat was of that variety. The yield per acre of potatoes has been greatly increased during recent years as a result of improved methods. In 1925, 39 farmers produced 400 or more bushels of potatoes on a measured acre, while in 1924, 33 made this record and in 1923, 53. The highest yield in 1925 was 571 bushels while the average yield for the State was 123 bushels as compared to an average of 104 bushels for the United States.

**Better Livestock.** Through the work in tuberculosis eradication, the control of abortion and other diseases, and the encouragement of the breeding of better livestock, more productive herds can now be found in all parts of the State. Records of cow testing association work in 1925 indicate that 18 herds averaged over 400 pounds of butter fat, 73 herds from 350 to 400 pounds and 208 herds from 300 to 350 pounds. The State average is probably not over 150 pounds of butter fat. Good evidence of the progress in swine breeding and feeding is the fact that only one state produced as many ton litters of swine as Pennsylvania in 1925. The ton litter project means the breeding and feeding of a litter to the weight of a ton or more in six months. In this work as well as other lines of improvement, too much credit can not be given the agricultural ex-

The fact that farmers are giving more and more attention to the efficient marketing of their products and purchasing of their supplies, is one of the most encouraging developments in present-day agriculture.

tension activities of the Pennsylvania State College for the valuable work done in disseminating scientific information and ideas among farmers based upon years of painstaking research. This work has played a most important role in placing our agriculture on its present satisfactory basis.

**Cooperation Among Farmers.** The growth of cooperative associations among farmers is another encouraging factor in the stability of Pennsylvania agriculture. In 1922, the membership of cooperative associations in the State was 29,040, but in 1925, this increased to 41,990 or approximately one out of every five farmers in the State, not considering duplication in membership. The amount of business done by these associations has also increased, being \$35,968,000 in 1925 as compared to \$32,309,000 in 1924.

The cooperative buying and selling movement in Pennsylvania is in better position at the present time to render real service to farmers than it has ever been since it started a generation ago. Annual reports are made to the Department by all the cooperative associations which makes possible a careful analysis of the growth,

financial condition and other important factors in the success of these organizations. Results of such studies are then distributed to all the associations for their use.

**Farm Living Standards.** As farmers appreciate and are able to equip their homes with electric light, water systems, furnace heat, etc., these improvements coupled with the mail delivery, telephone and radio, bring to the farm the best that the city can provide in the way of living standards, without the undesirable features of noise, dirt and unhealthful, dangerous environment for children.

More than 160,000 Pennsylvania farms, or about 80 per cent, have automobiles, over 86,700, or 43 per cent, have gas engines, and 20,000 or 10 per cent, have electric light and power. While the use of home conveniences is not so extensive, rapid progress has been

#### SOME INTERESTING FACTS ABOUT PENNSYLVANIA'S FARMS AND GARDENS

Pennsylvania produces more than 85 per cent of the nation's supply of mushrooms.

The yield of corn was 51 bushels per acre in 1925, the highest on record for the State, and the second highest in the United States for that year.

Automobiles are used on more than eighty per cent of Pennsylvania's 200,420 farms.

Pennsylvania ranks third in receipts from the sale of greenhouse vegetables and vegetable plants, (1920 census) having over 16,900,000 square feet of area under glass.

The products of 80 per cent of the improved farm area of the State are marketed through live stock.

made during the past few years. The latest figures show that only 29,000 farm homes, or 14.4 per cent, have running water, 22,889 or 11.4 per cent, have bath rooms and only 39,539 or 14.7 per cent have heating systems. Over 18,200 of the farm homes have radios.

**The Outlook for Agriculture.** Pennsylvania farmers will be confronted at all times with the keen competition of other agricultural areas. Relatively low prices will probably prevail so that the districts located less favorable either for production or from the standpoint of markets will have difficulty to realize a profit. In general, the system of farming in Pennsylvania which calls for the utilization of livestock and crop rotations coupled with the accessibility to markets assures a promising future as compared to competing areas.

**Improved Roads.** Improved roads are of a great economic importance in the marketing of agricultural products. Pennsylvania has now about completed the main highway system which has been the first necessary step in solving the road problem. It is now time to give more attention to the market roads for the farmer. This will require the building of less costly, hard-surfaced roads into each township which will enable farmers to transport their crops

with greater economy than is possible at the present time. It is not enough for the State to build the main trunk roads on which farmers make up only about 5 per cent of the traffic. More State aid must be given for the building of the market roads, especially in the less wealthy districts.

## DEPARTMENT ORGANIZATION

The diversity of Pennsylvania agriculture makes the work of a service and administrative agency such as the Department of Agriculture cover a wide range of activity, and in order to accomplish the desired ends, there must be a very definite organization. By having the Department divided into the following bureaus: Administrative, Animal Industry, Plant Industry, Foods and Chemistry, Statistics and Markets, it is possible to give efficient and prompt service to farmers in their daily problems, even in the more remote sections of the State. Several of the bureaus have the State divided into districts with competent men in each who keep in close touch with the development in their locality and are able to act quickly in case of any emergency which threatens the farming industry. For example, the Bureau of Animal Industry has the State divided into 11 districts with at least one trained man in each. The Bureau of Foods and Chemistry has 15 districts and employs a force of 19 field agents who watch closely all food products offered for sale.

## HOW DEPARTMENT APPROPRIATIONS ARE EXPENDED

Out of a little over \$4,000,000 estimated to be spent by the Department during the biennium from June 1, 1925, to May 31, 1927, one-half will be paid to farmers as indemnity for tubercular cattle. This is not as much money as other States are spending per capita for similar purposes, but the amount is over five and a half times that spent in 1921-1923. The protection and promotion of the animal life of the State other than that protected through indemnity of tubercular cattle will take about 30 cents out of every dollar, or \$1,201,645. A full discussion of the scope and value of this work appears in the report of the Bureau of Animal Industry starting on page 14.

The protection and development of plant life throughout the State will take 7.6 cents out of every dollar. This is the work of the Bureau of Plant Industry which is described in detail starting on page 46. About eight cents out of every dollar goes for the protection of Pennsylvania homes against harmful foodstuffs. The Bureau of Foods and Chemistry is charged with this work and its report appears on page 27. While spending \$319,340, or 7.9 per cent of the total for the enforcement of food, feed, fertilizer and similar laws, it is estimated that \$1,051,000 of revenue will be brought into the State treasury during the same period through fines and fees in enforcing these laws. A little over two cents of every dollar goes for the development of markets for farm products through the activities of the Bureau of Markets as described on page 35.

The overhead administration including the compilation of crop and livestock statistics of the Department and the expenses of the



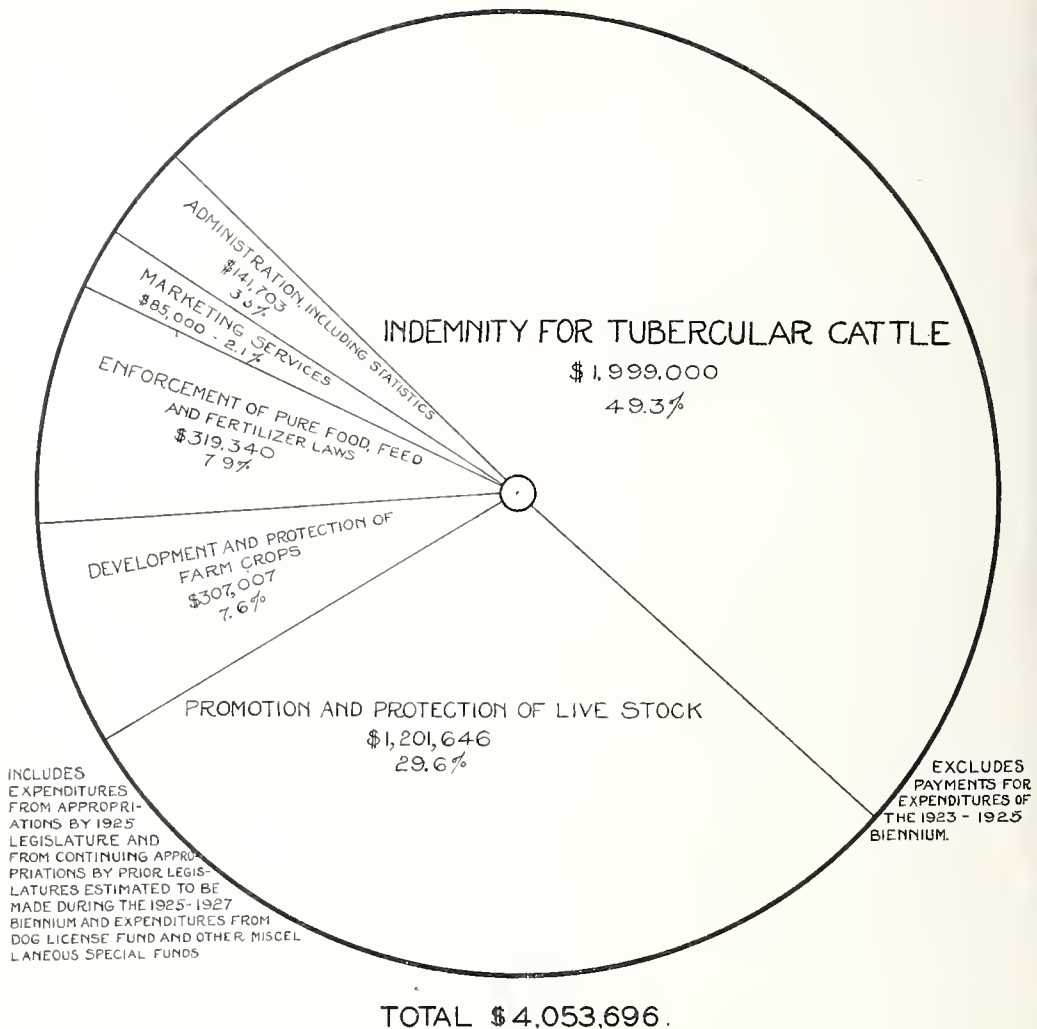


Fig. 1. Estimated total expenditures from general and special funds by the Department of Agriculture for the biennium June 1, 1925 to May 31, 1927.

State Farm Products Show takes but 3.5 cents out of every dollar. The scope of the statistical work is given in detail in the report of the Bureau of Statistics appearing on page 62. The Department contributes from \$3,000 to \$4,000 a year in addition to clerical help and printing to the State Farm Products Show.

When considered in its entirety, ninety-six and a half cents of every dollar go back to the localities in the various services described in this report. During the biennium 1923-1925, the expenditures of the Department amounted to \$2,197,168, the revenue created amounted to \$2,300,591, or \$103,423 more than was spent. Of the total expenditures, \$814,000 went directly back to the farmers for indemnities and premiums at fairs.

#### STATE FARM PRODUCTS SHOW

The Pennsylvania State Farm Products Show plays an important part in crystalizing farm sentiment throughout the Commonwealth and in fostering better farming and a higher standard of farm life.



The show has been held each January for the past ten years, expanding each year in floor space, number of exhibits, and number of meetings. The unanimous support of more than twenty-five farm organizations, the State Council of Agricultural Associations, the Pennsylvania State College and the various Departments of the State government makes the Show possible.

A feature which attracted much interest at the show in 1925 was the electrified Farm Exhibition near Harrisburg. A typical farmstead was completely electrified and all visitors to the Farm Products Show were urged to see the farm. More than 125 different electrical devices were actually demonstrated by expert attendants. Approximately 5,500 people saw the exhibition.

## PUBLICATIONS AND INFORMATION

While it is a generally accepted fact that "ignorance of the law excuses no one" yet it is also well-known that knowledge of the law is a great aid in law enforcement. Law enforcement of whatever nature can be carried on with efficiency and success only when it has the confidence and support of the public at large. To have this confidence, the public must be correctly informed. Means have been developed whereby the activities of the Department, especially in the enforcement of the numerous State laws dealing with agricultural welfare, can be placed before the public in an accurate and readable way. A weekly news bulletin is prepared and mailed to every newspaper and farm journal circulating in the State as well as to all farm leaders and farm organizations interested in the betterment of Pennsylvania agriculture and farm life.

Complete reports on certain features of the Department's work especially the analysis of foods, feeding stuffs, fertilizer and lime, are issued from time to time in order that the public may know the exact condition of the products they buy. When a certain project develops to the point where important facts are available and definite recommendations possible, a bulletin on that particular subject is issued and given wide distribution throughout the State. These bulletins are carefully edited and prepared so as to give complete and authentic information in a brief and clear manner. Since the Department specialists are extremely busy men and usually are not in position to give time to the preparation of material for the general public, an editor is in charge of the publication work. This specialist has the responsibility of preparing the weekly news bulletin and special articles for farm journals, and revising and editing material for publications, such as bulletins and circulars.

A complete list of the bulletins published during 1925 is as follows:

Bulletin	Subject
397	Licensed Nurserymen in Pennsylvania
398	Scale Insects Injurious in Pennsylvania
399	Preservation of Wild Flowers in Pennsylvania
400	County and State Agricultural Organizations
401	Directory of Stallions
402	Fertilizer Report 1924
403	Feeding Stuffs Report 1924

Bulletin	Subject
404	Bovine Infectious Abortion
405	Oriental Fruit Moth
406	Sprays for Japanese Beetle
407	The Farm Electrified
408	The Vegetable Industry of Pennsylvania
409	Crop and Livestock Report 1924
410	Control of Japanese Beetle in Lawns
411	Apple Rust and Its Control
412	How Farmers Can Secure Electric Service by Cooperative Effort
413	Greenhouse Fumigation
414	European Corn Borer Control and Quarantine Regulations

While the bulletins are given wide distribution by means of several mailing lists maintained by the Department, the value of such publications is best evidenced by the numerous requests received. It is estimated that the Department received requests from farmers, teachers of agriculture in high schools and colleges, and specialists of all kinds for approximately 25,000 bulletins during 1925.

A list of available bulletins can be secured at any time by writing to the Department.

### LEGISLATION

The Department gives consideration to all legislation of interest to farmers presented at the sessions of the Legislature. Hearings are frequently arranged so that the correct attitude of the farmers can be ascertained by the legislators. The Department encourages legislation that is designed to better the farming conditions in the State. Whenever it is deemed necessary to revise laws charged to the Department for enforcement, amendments are drawn up and every attempt made to get the favorable action of the Legislature. This enables the Department work to be carried on with the greatest possible efficiency and effectiveness.

### RURAL ELECTRIFICATION

The Department has been encouraging in every possible way the wider use of electricity in rural districts. A study of the use of electricity by farmers has been made and statistics have been compiled regarding the extent and use of electric current on the farm. The Department realizes the importance of making electricity available to the greatest number of farmers at a satisfactory rate and is doing everything possible to bring this condition about.

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## BUREAU OF ANIMAL INDUSTRY

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The livestock industry of Pennsylvania represents a farm investment of over \$166,688,000. Each year this industry is subject to diseases and parasites which, if not prevented and controlled, would exact tremendous tolls and jeopardize the livestock of the State.

The importance of the livestock industry of Pennsylvania is revealed partly by the fact that the products of 80 per cent of the improved farm land in the State are marketed through livestock.

Having healthy herds and flocks is, therefore, one important essential in a profitable agriculture. Great strides have been made during the past few years in the prevention and control of many of the most serious and destructive diseases of Pennsylvania's flocks and herds, as is brought out in more detail through this report. A plan has been adopted for the prevention and control of bovine abortion. Hog cholera has been practically controlled as a menace to the hog industry. The big risks connected with bovine tuberculosis are being rapidly eliminated. A dependable method for the prevention and eradication of tuberculosis in poultry has been inaugurated. The white diarrhoea menace to baby chicks is being successfully solved. In poultry and swine, parasites which are causing heavy losses, are being given careful study.

While specific controls are being developed, one problem will always remain, and that is the absolute necessity of promoting health by sanitary measures. Educational work along this line is being pushed rapidly.

The Bureau of Animal Industry is organized to safeguard the livestock producers as well as the general public in every possible way. A staff of specialists, a field organization of 11 districts with, a man in charge of each, and a well-organized Bureau consisting of six sections, make it possible to keep in daily touch with developments in all parts of the State and to render immediate assistance to livestock owners.

## RAPID PROGRESS IN TUBERCULOSIS ERADICATION

Tuberculosis is one of the most common and destructive diseases of livestock in Pennsylvania. The loss is extensive but not readily apparent. The fact that the disease is widespread in the State and that the loss is great but not so apparent makes the problem of eradication one of real economic importance.

The most rapid progress in the eradication work in the history of the State was made in 1925. This was due largely to the great increase in the appropriation for indemnity made by the Legislature. A total of 382,204 cattle were tuberculin tested in 1925 as compared with 246,266 in 1924, 186,170 in 1923, and 78,308 in 1922. Table I shows the progress of the work since 1896.

**The Area Plan.** Beginning in April, 1923, tuberculin testing was started on an area basis. Under the area plan, all the cattle in an area of one or more townships were tested at one time and followed up by the necessary retesting, with practically tuberculosis-free areas resulting. By the end of 1925, testing on an area basis progressed to a point where the herds in six counties and 191 townships in twenty-seven other counties were completely tested. A total of 219,210 cattle were tested by the area plan in 1925. In three of these counties, the disease has been reduced to less than one-half of one per cent. The eradication of bovine tuberculosis throughout the State is in sight providing sufficient money for testing and indemnity is made available within the next few years. On the basis of present



operations, it is expected that approximately one-half of the cattle in the State will be tuberculin tested by June 1, 1927. Taking the results so far accomplished in the establishment and maintenance of tuberculosis-free herds and assuming that there will be sufficient money available for maintenance and indemnity it is estimated that tuberculosis will be practically eliminated from the State within the next few years.

**Federal Indemnity.** During 1925, a total of \$271,154 of Federal indemnity and \$731,491 of State indemnity was paid owners of reacting cattle. Previous to July 1, 1925, Federal claims were paid on the basis of \$25.00 for non-registered animals and \$50.00 for reg-

TABLE 1. Tuberculin Testing of Native Cattle

Year	Number Herds Tested	Number Cattle Tested	Number Reactors	Number Free Herds	% Free Herds	% Reactors
1896	132	5,430	1,191	187	44	21.9 —
1897	626	7,613	1,099	298	47	14. —
1898	582	3,316	1,062	220	37	17.8 —
1899	429	6,443	1,107	158	36	17.1 —
1900	651	2,473	1,314	254	38	15.5 —
1901	545	8,662	1,205	236	43	13.8 —
1902	375	6,066	1,024	143	37	16.8 —
1903	337	5,573	1,060	132	38	19.02
1904	322	5,159	891	144	44	17.04
1905	529	7,774	1,179	290	54	15.1 —
1906	723	7,079	901	262	36	13.8 —
1907	402	7,153	905	171	42	13.2 —
1908	501	7,083	1,037	264	52	14.6 —
1909	731	9,942	1,440	410	56	14.4 —
1910	1,085	13,288	1,810	617	56	13.6 —
1911	1,109	13,403	1,334	695	62	6.95
1912	1,534	20,534	2,424	898	58	11.31
1913	1,308	17,101	1,346	931	71	7.87
1914	1,252	15,901	1,077	900	71	6.77—
1915	808	15,117	897	672	77	6.82
1916	1,272	12,244	1,996	870	68	10.37
1917	1,232	17,394	1,986	751	60	11.57
1918	1,105	15,698	1,644	696	63	10.47
1919	2,265	30,149	2,438	1,543	68	8.08—
1920	2,100	31,393	2,802	1,399	66	8.92
1921	2,515	37,196	3,391	1,635	65	9.11
1922	5,393	78,308	3,845	4,093	75	4.91
1923	17,038	186,170	7,498	15,773	91	4.02—
1924	28,429	246,266	6,697	26,109	91	2.71
1925	47,491	382,204	24,444	39,972	84	6.03
Total	122,821	1,222,132	81,048	100,723	81	6.61

istered animals. The Federal Bureau allocated to Pennsylvania \$200,000 for their fiscal year, and as this amount was insufficient to continue the payment of indemnity on a \$25.00 to \$50.00 basis the Federal Government in a cooperative agreement with the State reduced the maximum amount of \$25.00 for grades to \$7.25, and \$50.00 for registered to \$14.50. It was deemed advisable to reduce the maximum amount and benefit the largest possible number of owners of reactors by spreading the \$200,000 over the entire year rather than spending it during the first three or four months.

**Benefits.** The tuberculosis work has already progressed to a point where its benefits to the dairy industry are apparent. It is resulting in the more efficient production of milk, first because of the freedom from disease, and second because of the greater number of



pure breds, especially sires which are introduced into disease-free herds. It means a more healthful product for the public as well as a better market outlet for the producer; the market is expanded for the breeding stock as well as the dairy products. This is shown in counties where all herds have been tested by the active demand for dairy products, grade dairy cows and foundation pure bred breeding stock.

TABLE 2. Testing by the Modified Accredited Area Plan—  
January 1 to December 31, 1925

County	No. Townships Awaiting Test	No. Townships Tested	No. Herds Tested	No. Cattle Tested	No. Reactors	% Reactors
Beaver	9	5	336	1,743	215	12
Bedford	0	1	143	1,398	35	3
Blair	1	4	445	3,618	387	11
Bradford	3	7	1,118	12,477	691	6
Butler	0	29	3,920	19,723	541	3
Cameron	3	2	142	605	6	1
Center	5	2	125	1,168	45	4
Clarion	5	9	1,243	8,119	64	1
Clearfield	10	10	1,583	4,886	52	1
Columbia	2	17	1,749	9,202	179	2
Crawford	0	33	75	559	105	18
Elk	4	3	151	581	1	0.1
Erie	5	11	1,649	23,177	3,411	15
Fayette	0	7	1,861	5,692	329	6
Forest	5	3	186	673	3	0.4
Franklin	4	8	1,808	12,404	1,293	10
Indiana	1	23	4,156	16,637	273	2
Jefferson	0	0			5	
Lawrence	0	14	1,909	10,051	579	6
McKean	0	8	955	4,854	201	4
Mercer	0	0	46	431	20	5
Mifflin	2	1	98	692	48	7
Monroe	16	3	270	1,055	9	0.8
Montgomery	0	0			6	
Northumberland	3	5	468	3,313	312	9
Somerset	9	1	276	2,141	33	2
Susquehanna	6	19	2,056	28,109	3,752	13
Tioga	12	8	1,446	16,141	734	5
Union	5	5	514	4,203	702	17
Venango	4	14	1,688	8,954	97	1
Warren	6	6	823	6,812	418	6
Wayne	2	2	31	541	229	44
Westmoreland	7	6	1,906	9,251	1,234	13
Total	129	266	33,176	219,210	16,019	7

Table 3 gives a bird's eye view of the tuberculosis eradication situation in Pennsylvania, showing the number of cattle under supervision, the cattle population and the approximate number of tuberculous cattle.

In addition to the tuberculin testing of native cattle, the Bureau tests all untested cattle for dairy and breeding purposes brought into Pennsylvania at one of the three designated stockyards, Pittsburgh, Lancaster or West Philadelphia. In 1925, a total of 9,250 cattle were shipped without permit and were therefore tested upon arrival at the stockyard. A total of 12,219 were tested before shipment. In both cases, the number of cattle shipped in is larger than in 1924.

TABLE 3. Cattle Under Area and Individual Accredited Herd Plan,  
Cattle Population and Approximate Number of Tuberculous  
Cattle in Pennsylvania—December 31st, 1925

County	(1920 Census) Cattle pop.	Tot. No. Herds Under Official Supervision	Tot. No. Cattle Under Official Supervision	Approx. %* Tuberculous Cattle	Approx.* No. T. B. Cattle
Adams	25,727	25	320	20	5,081
Allegheny	19,607	165	2,524	14	2,391
Armstrong	17,544	136	1,388	9	1,454
Beaver	13,101	653	4,913	3	245
Bedford	25,957	254	2,508	2	468
Berks	45,496	83	1,585	22	9,880
Blair	13,014	525	4,418	10	859
Bradford	58,027	1,485	16,147	7	2,931
Bucks	33,984	197	3,163	22	6,780
Butler	24,804	3,920	19,723	1	50
Cambria	12,266	125	1,685	5	529
Cameron	1,052	197	955	1	10
Carbon	3,560	79	826	15	410
Center	23,073	323	3,148	2	398
Chester	54,783	200	4,962	20	9,964
Clarion	19,889	1,325	8,939	1	169
Clearfield	12,827	1,583	4,886	1	79
Clinton	7,605	1	23	2	151
Columbia	13,796	1,948	11,592	1	22
Crawford	49,078	5,736	49,807	.5	
Cumberland	26,437	76	904	20	5,106
Dauphin	23,584	25	314	25	5,820
Delaware	10,741	40	1,911	15	1,324
Elk	4,780	1,048	3,849	1	10
Erie	49,141	1,790	24,587	10	2,455
Fayette	14,286	1,926	6,342	5	397
Forest	2,040	186	673	1	13
Franklin	29,797	1,965	13,974	15	2,373
Fulton	7,895	2	35	1	78
Green	26,855	15	285	5	1,328
Huntingdon	18,220	95	1,323	10	1,689
Indiana	18,994	4,633	17,407	1	50
Jefferson	11,090	3,105	11,090	.5	
Juniata	10,498	172	2,105	8	671
Lackawanna	12,936	29	865	10	1,217
Lancaster	85,094	129	1,924	20	16,634
Lawrence	18,456	1,909	10,051	1	420
Lebanon	21,353	68	997	27	5,494
Lehigh	15,261	47	854	20	2,880
Luzerne	13,087	23	1,169	4	476
Lycoming	25,943	139	1,979	10	2,306
McKean	11,321	1,202	7,324	1	79
Mercer	33,901	4,653	33,901	.5	
Mifflin	12,155	181	1,362	5	539
Monroe	7,856	347	1,235	1	66
Montgomery	29,452	238	2,683	22	5,889
Montour	5,112	47	613	2	91
Northampton	17,528	32	425	15	2,565
Northumberland	15,466	581	4,443	10	1,102
Perry	15,572	54	625	10	1,494
Philadelphia	1,460	11	215	9	101
Pike	3,210	12	182	2	60
Potter	17,913	257	3,326	1	145
Schuylkill	13,198	47	567	15	1,894
Snyder	11,414	101	1,112	15	1,545
Somerset	31,251	414	3,521	3	831
Sullivan	7,600	132	1,624	3	170
Susquehanna	47,752	2,271	30,259	12	2,099
Tioga	41,987	1,833	20,011	4	878
Union	10,897	569	4,853	15	906
Venango	12,962	1,899	11,064	1	18
Warren	20,867	854	7,122	5	687
Washington	38,328	204	3,344	11	3,848
Wayne	34,051	242	2,651	5	1,570
Westmoreland	31,353	2,013	10,321	13	2,734
Wyoming	13,809	105	1,682	9	1,080
York	52,808	150	2,132	20	10,135
Total	1,461,771	46,833	428,089	12	133,168

\*Estimates made on basis of testing of large number of herds in the various counties.

## MEAT HYGIENE WORK PROTECTS PUBLIC

The Bureau's work in meat inspection includes the supervision of slaughter-houses and meat markets in order to safeguard the public from diseased and other unwholesome meats, the investigating and prosecuting of all violators of state laws dealing with livestock products, and the establishing of local meat inspection wherever possible.

**Conditions Improved.** In 1925, 2,048 meat markets, 4,115 slaughter houses, 61,550 carcasses and 2,282,021 pounds of meat were inspected, of which 1,466 carcasses and 5,405 pounds of meat were condemned. While several very serious cases of badly diseased carcasses were found on sale and a number of filthy slaughter-houses and insanitary meat markets were found in operation and the proprietors prosecuted, the general condition throughout the State is improved. This is indicated by the fact that only 3.5 per cent of the meat markets were found defective, and these were markets which probably handle even a smaller per cent of the total meat supply of the State.

While 476 of the 4,115 slaughter-houses or 11 per cent, were found defective and 241 were ordered closed after second notice, the number defective was about 2 per cent less than in 1924. It must be remembered that a large portion of meat and meat products come from the large packing establishments which have careful Federal inspection of animals when slaughtered. The enforcement of the State Meat Hygiene Law concerns the numerous slaughter-houses in Pennsylvania, each of which may not be the source of great quantities of meat but are nevertheless important from the standpoint of protecting the public health.

**Prosecutions.** While the greater portion of slaughter-house proprietors are interested in giving the public a clean, wholesome product, an unscrupulous butcher is occasionally found who is so unprincipled that he will maintain the most filthy slaughtering plant imaginable and knowingly sell diseased meats. Several butchers were fined \$150 to \$250 for attempting to sell meat from diseased cows, and other cases are now pending in the courts. Cases such as these are promptly taken care of so that the public is protected.

## BOVINE INFECTIOUS ABORTION CONTROL

The Bureau has been making studies of abortion and sterility in cattle for a number of years and since 1920 has been conducting this work under a definite policy. It is estimated that the average loss to a farmer on each cow suffering from abortion is from \$60 to \$75 per year, and the total annual loss in the State is more than \$5,000,000. This makes the disease one of the great economic importance. The Pennsylvania Plan for the prevention, control and eradication of abortion consists of blood tests in conjunction with proper sanitation. Data at hand shows that it is practically impossible to control abortion by sanitary measures alone as long as infected animals are permitted to remain in the herd. In addition to sanitary measures, the proper use of blood tests and the elimination of reactors are necessary. Full details of the Pennsylvania Plan as well as other important information on abortion are given in General Bulletin No. 404 of the Department.



**Interest Grows.** More interest has been shown in the Pennsylvania Plan during 1925 than in any previous year since its adoption, and the personnel and facilities for handling the work have been expanded by the Bureau. One indication of this interest is the fact that 50 per cent more blood samples were submitted in 1925 for seriological test for the diagnosis of the abortion disease than in the year 1924. The Bureau carried on work in 234 herds; 4,462 animals were examined for breeding efficiency; 9,550 blood samples were tested for disease with the result that 2,247 showed positive reaction. The owners of 100 of the 234 herds are signed up and are working under the Pennsylvania Plan. Herds in which the Plan has been properly carried out have been unusually successful in controlling and eradicating the disease. This control is a most encouraging factor in present day cattle breeding since it greatly reduces the risks and losses in breeding and stimulates the keeping of better livestock. Investigational work on the disease is now progressing at the Bureau's Experimental farm and control work is being carried out in the different State institution herds in addition to the farms already mentioned.

### HOG CHOLERA LOSSES REDUCED

Hog cholera is the most prevalent disease of swine in the State. It is extremely infectious and a high rate of mortality usually follows infection. In infected herds, from 90 to 100 per cent of the hogs die if precautions are not exercised in the early stages of the outbreak. On the other hand, in herds which have been protected by proper vaccination and sanitary measures, only from two to four per cent die of the disease. During 1925, 50,000 hogs were vaccinated on 696 farms in the State. This represents about 6 per cent of the total hog population.

Vaccination was employed on 2,801 hogs on 260 premises where cases of hog cholera were known to exist. The result of these vaccinations reduced the mortality in the herds to approximately three per cent. In other words, when proper precautions are taken, the risk from hog cholera can be practically eliminated as a menace to the hog industry in the State.

Every possible precaution is taken to make sure that the serum used in the control of hog cholera is a pure, potent product. The Bureau has a contract with a laboratory to furnish the clear, concentrated anti-hog cholera serum and hog cholera virus. This serum and virus is received by the Bureau and each lot is tested for purity and potency before it is distributed to veterinarians for use in swine herds. This practice assures not only a pure product, but the cost is lower than if the product were purchased by the individual.

### SERIOUS TRANSMISSIBLE DISEASES CONTROLLED

Transmissible disease prevention service is rendered livestock owners throughout the State. The emphasis is placed upon educational work on disease prevention and control of parasites. The fact that anthrax, blackleg and hemorrhagic septicemia may be prevented by vaccination has been stressed in every possible way. Human lives are also subject to anthrax and glanders which makes the immediate control of such disease extremely important.



Owners of livestock living on premises on which outbreaks of anthrax, blackleg and hemorrhagic septicemia have occurred in previous years are warned annually by letter from this office about vaccinating their animals against these diseases before they are turned on pasture.

**Anthrax.** During 1925 reports were received of vaccinations against anthrax in 11 herds involving 231 animals. The disease actually existed in three of the herds at the time the vaccinations were made. The remaining eight herds were vaccinated as a preventive measure. As this disease is disseminated through soil that is contaminated with the infection, the outbreaks usually occur in herds which pasture on lands that become inundated during the spring freshets from streams on which tanneries are located.

The most serious outbreak of this disease that occurred during the year was in a herd originally containing 25 animals of which seven died as a result of anthrax infection. These animals had been pastured on fields which had been flooded in the spring from the waters of the Swatara Creek on which several miles up the stream is located a tannery.

Five of the infected animals died before veterinary assistance was called. When a diagnosis of anthrax was made the remaining animals in the herd were removed to other pasture and vaccinations carried out with the result that the infection was controlled. The owner was advised to again carry out vaccinations the following spring and to refrain from allowing animals to pasture on these infected fields, which he was advised to put under cultivation.

**Glanders.** Eight outbreaks of glanders on eight premises in three different counties occurred during 1925. A total of 127 animals were exposed. All animals showing symptoms of the disease were destroyed and all exposed animals placed under quarantine. Indemnity amounting to \$1,543 was paid to owners of horses and mules destroyed in order to control glanders during 1925.

**Blackleg.** Reports of vaccinations against blackleg were received covering seven herds involving 85 animals in 1925. These vaccinations were carried out as a preventive measure.

Vaccinations against hemorrhagic septicemia as a preventive measure were reported in 13 herds involving 287 animals. A number of cattle handled through the Lancaster Stock Yards were affected with hemorrhagic septicemia upon arrival at the yards. A pen is set aside as a quarantine pen in which all such animals are placed and vaccinations carried out either by the local practitioner or by one of the Bureau's agents located at the Yards.

**Outbreak of Scabies.** One outbreak of Scabies in sheep was reported involving 19 animals. These animals were placed under quarantine, treated and dipped under the supervision of the local veterinarian, at the expense of the owner. The efficient control of scabies in Pennsylvania can be largely contributed to the enforcement of the Bureau of Animal Industry Regulation 507, which governs the importation and transportation of sheep and goats into and within Pennsylvania.

## FOOT AND MOUTH DISEASE REGULATIONS

In order to prevent the invasion of foot and mouth disease into Pennsylvania from Texas where an outbreak occurred in the fall of 1925, a regulation was established and enforced by the Bureau governing the importation into Pennsylvania of livestock, poultry and other carriers of the disease. Modifications were made in the regulations as the Texas situation improved. However, the disinfecting of all hay and straw of foreign origin used as packing material was continued throughout 1925. Continuous inspection of all animals handled through Pennsylvania stockyards was also inaugurated during the period the embargo was effective.

This prompt and thorough action of the Bureau eliminated all possible danger of any spread of the disease into Pennsylvania.

## PROGRESS IN POULTRY DISEASE CONTROL

**Tuberculosis in Poultry.** Important steps were taken during 1925 in the control of several extremely serious poultry diseases. Tuberculosis in poultry has been given special study by the Bureau since 1922. In 1925, 12 flocks, totaling about 2,500 chickens were tested. During the period from July, 1922, to October, 1925, 9,453 tests were made and of this number 1,131 or about 12 per cent reacted. The results of these tests made it desirable to develop a definite plan for handling avian tuberculosis on a flock basis. With this in mind, the Bureau has developed a plan which includes the following features:

The extent of the infection is determined by tuberculin test and autopsy. All diseased fowls are removed and slaughtered under official supervision. The premises are then cleaned thoroughly and disinfected. Re-tests are made at the end of 60 or 90 days. If reactors are then found, the flock is given another test in six months. After all evidence of the tuberculosis is gone, the flock is tested annually. All owners of flocks are expected to practice careful breeding, correct feeding, proper flock management and good sanitation. A certificate is issued to owners who agree to follow the Pennsylvania Plan in detail and whose fowls have passed two annual negative tuberculin tests.

**Fowl Pest Controlled.** An outbreak of fowl pest which occurred during the latter part of 1924 continued during the early part of 1925.

The occurrence of fowl pest in Pennsylvania, especially among the native flocks presented a very grave menace to the industry. This is the most fatal disease which the Bureau has encountered in poultry. In one flock every fowl died after the introduction of two turkeys bought in the Philadelphia poultry market as Holiday fowls and were in the flock only two days. With the exception of a very few cases the introduction of this disease could be traced directly to the poultry market.

Immediately upon realizing the seriousness of the pest outbreak regulations to prevent the importation of poultry and the invasion of the disease were made effective by the Bureau. Through the good support received from the various cooperating agencies such as the



railroad companies, express companies, poultry breeders and feeders, market men and local veterinarians, the Bureau was able to prevent the spread and eradicate the disease as there has not been a single case reported since early in May, 1925.

**Other Diseases.** In addition to the Bureau's activities in controlling fowl pest many investigations of poultry troubles were carried out by the Bureau's field veterinarians and the laboratory force.

The demand for services in handling transmissible poultry disease and the blood test for the diagnosis of bacillary white diarrhoea in chickens became so great that it was found necessary to assign one of the veterinary agents of the Bureau to poultry work. Part of his time is spent in the Philadelphia laboratory and part in the field demonstrating to practicing veterinarians the technic of collecting blood from chickens for test and making field investigations in outbreaks of transmissible poultry diseases.



Fig. 2. Poultry houses and flock on the experimental farm, Bureau of Animal Industry.

The accredited hatchery work inaugurated in the State in 1925 provides in part that all the birds in the flocks working under this Plan for accreditation must have a blood test for bacillary white diarrhoea, a serious chick disease which causes a heavy mortality. This disease is carried from the laying hen to the chick through the egg. Therefore, testing the blood of the hen and eliminating those carrying the disease greatly reduces the loss in chicks. During the year 18 flocks of chickens consisting of 11,779 birds were tested. In addition to the above number, blood sera were procured from 824 birds by local veterinarians and submitted for test.

## STATE INSTITUTIONS SERVED BY BUREAU

There are 16 State institutions which are maintained wholly by State appropriations. These institutions have extensive herds of livestock and flocks of poultry. The Bureau is charged with the prevention, control, and eradication of transmissible diseases from these herds and flocks. The cattle are tuberculin tested by the Bureau and every precaution is taken against infectious abortion, hog cholera and similar diseases.

**Survey Made.** Beginning June 1, 1925, a general survey was made concerning the health of the livestock and poultry at all State owned institutions, with a view of finding out if any preventable losses were occurring and if so, to institute methods for the prevention of such losses.

As a result of this survey, the following condition of livestock is reported: Horses were found to be in excellent shape and the care, method of handling and general sanitation were likewise very satisfactory.

**Cattle.** Infectious abortion was found in many of the herds of cattle. During the year, herds in eight of the institutions were placed under the Pennsylvania Plan for eradicating abortion disease. The remaining State institutions will be placed under this plan as time and personnel permit. With one exception all the herds were accredited as being free of tuberculosis.

**Swine.** The general condition of the hogs in most of the institutions was found to be good. On account of restricted quarters and unfavorable conditions, a few institutions experienced difficulty in raising hogs due to parasitic infestation. A careful study of hog parasites is being made in these herds with a view to improve the hog management which will eliminate parasites.

**Poultry.** During 1925 several of the institutions were forced to destroy their flocks on account of disease. One experienced an outbreak of fowl dyptheria and coccidiosis. Their losses were large and the only possible way of eliminating the infection was to destroy the birds, thoroughly clean and disinfect all houses and yards. Another experienced various diseases and a heavy parasitic infestation which made their poultry establishment unprofitable to maintain. At the recommendation of the Bureau this flock was disposed of and a new flock established from chicks purchased from a disease-free flock. A new poultry house was built on a section of the farm, where no fowl had been kept. This change has been a success, and will act as a foundation flock for this institution.

## EXPERIMENTAL FARM STUDIES UNDER WAY

An 80-acre farm, located near Harrisburg in Cumberland County, is being used by the Bureau for the study of transmissible animal and poultry diseases and parasites under actual farm conditions. The Bureau has had a laboratory for many years in which investigations were made but it was always handicapped by the lack of a place where scientific experiments could be carried out on a farm



scale. The most satisfactory and practical control methods can be developed only by extensive studies in the laboratory and on the farm.

The diseases which are generally prevalent in the State and which cause losses to farmers of millions of dollars are being studied. These include such diseases as hog cholera, infectious abortion of cattle, tuberculosis of cattle and poultry, Johnnes disease, and common diseases of poultry. Parasites of sheep and hogs also come in for considerable attention. The need for having a farm, somewhat isolated from other farms, for conducting these studies is obvious. No farmer would want the State to conduct such investigations on his farm with healthy herds and flocks nearby.

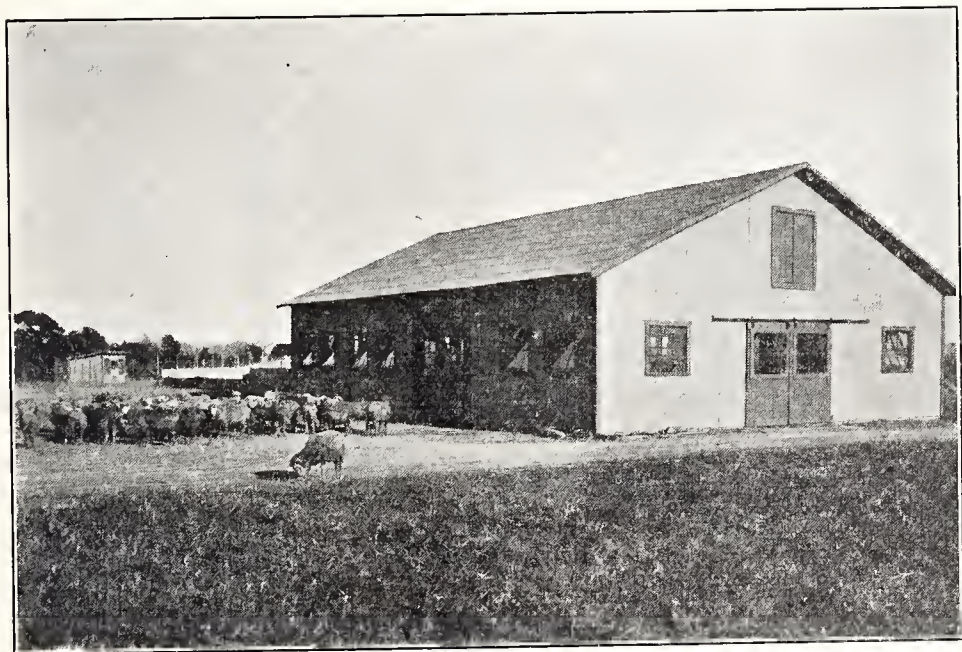


Fig. 3. Sheep barn and flock on experimental farm, Bureau of Animal Industry.

### DOG LAW EFFECTIVELY ENFORCED

The rigid enforcement of the Pennsylvania Dog Law by the Bureau has resulted in an increase of 184,761 licensed dogs in 1925 over 1921 when the enforcement was in the hands of County officials. The number of licenses in 1925 was 479,222 while in 1921 the total was 294,461.

**Results.** The present dog law became effective on January 15, 1922, and each year since, the licensed dog population of the State has increased greatly. As a result of the close check-up on the unlicensed and uncontrolled dogs, human lives, good dogs and live-stock have enjoyed greater protection. The number of cases of rabies in dogs, a source of real danger to humans as well as live-stock, has been reduced and the great menace of the uncontrolled dog to the sheep industry has been lessened.

A study of Table 4 shows that most counties have an increase in the number of licensed dogs in 1925 over 1924. There are decreases,

TABLE 4.

Number of Individual Dog Licenses Issued by Counties for 1921, 1922, 1923, 1924 and 1925. (Philadelphia, Pittsburgh and Scranton not Included.)

COUNTY	1921	1922	1923	1924	1925
Adams	3,015	3,444	3,997	4,285	4,282
Allegheny	11,339	11,951	27,473	27,680	31,416
Armstrong	5,615	6,314	6,844	8,017	8,009
Beaver	3,762	4,986	4,620	7,707	8,405
Bedford	4,195	4,530	5,368	5,773	5,669
Berks	12,050	12,221	13,115	14,233	13,846
Blair	5,589	7,006	8,015	8,397	8,990
Bradford	4,475	4,881	5,114	5,388	5,471
Bucks	6,190	7,419	8,099	8,923	8,962
Butler	4,921	5,225	5,757	6,303	6,928
Cambria	8,430	9,915	11,234	11,610	11,806
Cameron	317	356	452	468	421
Carbon	1,409	2,653	3,123	4,168	4,654
Centre	2,737	2,860	3,490	3,524	3,598
Chester	10,544	11,135	13,314	13,909	14,025
Clarion	2,682	3,087	3,308	4,170	4,615
Clearfield	4,457	5,490	6,361	6,859	6,644
Clinton	2,008	2,386	2,449	2,848	2,955
Columbia	4,026	4,242	4,670	5,422	5,490
Crawford	4,137	5,177	5,956	6,583	7,107
Cumberland	4,208	4,668	5,317	5,801	5,931
Dauphin	5,535	8,178	9,927	10,670	9,932
Delaware	10,000	10,343	11,844	13,739	13,312
Elk	2,280	2,478	2,880	2,947	2,796
Erie	7,212	7,586	8,507	9,880	10,350
Fayette	5,229	8,820	12,101	15,569	14,876
Forest	465	541	624	888	924
Franklin	3,904	4,274	5,045	5,506	5,805
Fulton	914	1,182	1,471	1,886	1,554
Greene	3,048	3,826	4,206	5,095	5,561
Huntingdon	2,762	3,322	3,687	3,672	4,004
Indiana	6,003	6,429	7,826	8,267	7,916
Jefferson	3,524	4,002	5,547	5,965	5,011
Juniata	1,242	1,796	1,756	1,727	2,054
Lackawanna	2,395	3,627	4,162	6,172	5,245
Laneaster	10,530	12,977	12,820	12,618	11,794
Lawrence	3,543	4,230	4,681	6,054	6,354
Lebanon	4,489	4,618	4,988	4,813	5,045
Lehigh	6,154	6,194	6,752	7,209	7,505
Luzerne	11,546	11,708	10,809	25,651	23,770
Lycoming	4,148	5,421	5,689	6,514	6,687
McKean	2,108	2,805	3,309	3,885	4,051
Mercer	4,025	5,449	5,922	7,042	8,137
Mifflin	2,494	2,580	2,824	3,078	3,228
Monroe	1,987	2,706	2,846	3,122	3,201
Montgomery	12,206	12,145	13,387	13,551	14,216
Montour	1,170	1,255	1,330	1,436	1,518
Northampton	4,898	5,942	6,634	7,841	8,233
Northumberland	3,900	4,680	6,357	7,475	7,839
Perry	2,701	2,834	2,989	3,230	2,960
Pike	793	961	1,109	1,236	1,290
Potter	1,487	1,719	1,964	1,966	2,153
Schuylkill	4,235	7,180	9,744	16,121	17,547
Snyder	1,874	1,936	2,004	2,063	2,077
Somerset	5,720	6,298	7,164	8,052	8,016
Sullivan	1,013	1,081	1,076	1,291	1,270
Susquehanna	2,871	3,347	4,133	4,145	4,238
Tioga	2,036	3,344	3,400	3,523	3,850
Union	1,277	1,353	1,289	1,507	1,520
Venango	2,957	4,012	4,661	5,209	6,189
Warren	2,352	2,695	2,967	3,827	4,046
Washington	8,240	11,408	12,904	14,740	15,716
Wayne	2,011	2,379	2,441	2,893	3,674
Westmoreland	11,055	15,746	17,750	20,651	20,064
Wyoming	1,675	1,718	1,811	1,772	1,840
York	7,248	10,776	12,391	13,483	12,630
TOTAL	294,461	347,847	405,804	469,833	479,222

however, in the anthracite counties due to the labor conditions. This also applies to certain bituminous counties.

In order to accomplish this effective work in enforcing the dog law, 16 dog law enforcement districts are maintained with a regular agent working in each. Besides these regular agents two traveling squads are employed which work principally in rural and sheep raising sections. Check-ups were made both day and night in an effort to reduce losses by uncontrolled dogs.

**Livestock Losses.** During 1925, a total of 6,204 sheep were either killed or injured and \$50,888 was paid for the damage done. Other livestock and poultry killed or injured for which damages were paid included 4,923 head of poultry, 165 domesticated hares, 51 hogs, 29 cattle, 2 goats and 1 horse. This shows that practically all classes of livestock and poultry suffer from attacks by dogs. A total of 12,975 dogs were killed during the year, owners of dogs settled for damages to the extent of \$3,976 and a total of 7,866 prosecutions were brought.

**Damages Paid.** An increase in the amount paid out for damages is shown for 1925. This is largely caused by the increased amount paid out for poultry and also that sheep and other livestock had a higher market value during 1925 than for several years. The actual number of sheep killed or injured has decreased, and information received indicates an increase in the number of sheep throughout the State. The increase in the poultry damages is not due to an increase in the actual losses, but to the more general knowledge that compensation for such losses can be obtained.

### FEWER RABID DOG OUTBREAKS

In addition to the licensing of dogs and the elimination of stray, unlicensed dogs, the Bureau keeps a close tab on all rabid dogs reported in the State. As soon as a rabid dog is reported, the Bureau makes an investigation and places under individual quarantine all exposed dogs or other animals. An examination of the dog is made and if a case of rabies is definitely established, any person bitten is advised to consult their physician as to the advisability of taking the Pasteur treatment. During 1925, 163 animals were quarantined on 108 premises, and 62 actual cases of rabies were found. Twenty-eight persons were bitten by mad dogs during the year. As a result of the examinations made by the Bureau, a total of 114 dogs were destroyed to control rabies.

There was a very noticeable decrease in the number of rabie cases, number of animals exposed and persons bitten and number of animals destroyed, from the previous year. This decrease is very largely due to the Bureau's method of controlling this disease and the cooperation of the veterinary practioners, livestock owners, municipal authorities, civic organizations and the rigid enforcement of the Pennsylvania Dog Law.

### STALLION ENROLLMENT

The Bureau is charged with the enforcement of the Stallion Enrollment Law which includes inspection as to breed, soundness and confirmation of registered stallions and jacks, that stand for public service in the State.



**Survey Made.** In former years these inspections were made by the Bureau agent in charge of the district in which the stallion or jack was located. Owing to the increased demand for the services of these district agents in other activities connected with the Bureau work, in the year 1925 it became necessary to assign one of the Bureau veterinarians to make a survey of the horse and mule breeding conditions in the State.

The activities of the veterinarian include the inspection of the licensed stallions and jacks, investigations as to what use is being made of stallions and jacks that are not licensed, procuring evidence of violation of the Stallion Enrollment Law, if there be any, advise owners of stallions, jacks and mares as to breeding activities throughout the State and collect data as to the number of mares bred to stallions and jacks and the number of colts produced. Through this survey we are able to give the approximate number of foals produced by counties, in the State, for the year 1924.

**Licenses Issued.** The licenses issued to stand stallions and jacks for public service are classified as follows: highly commended, registered and sound and registered and unsound. For the year 1925 there was one highly commended, 241 registered and sound and 13 registered and unsound licenses, or a total of 255, issued in the State. In 1924, 270 licenses were issued, and in 1923, 351.

All the facts revealed by the stallion enrollment work during the past year indicate a real opportunity for good horse breeding in all parts of the State.

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## BUREAU OF FOODS AND CHEMISTRY

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The work of the Bureau of Foods and Chemistry is a line of activity which reaches every home in the State. It is a mantle of protection thrown about every pantry shelf since the pure food laws relate in some way to all food products which find their way into the pantry and kitchen. Even the small candy stores and the street vendors are closely watched by the food agents. Thirty-one separate laws regulating the sale of foods and other agricultural products have been assigned to the Bureau for enforcement.

**New Laws.** In the constant fight to clean up food frauds and protect the public health, the Commonwealth has always been alert to the need of new laws and regulations and the modification of old ones with the result that Pennsylvania has today the most complete and satisfactory group of laws with which to fight food fraud of any state in the Union. Four of the present laws are new ones, enacted by the Session of 1925, and which became effective during the year. These include the Carbonated Beverage and Still Drink Law, the Milk Testing Law, the Milk Container Law and the Oyster Law, each of which will be discussed in more detail later. A new Fruit Syrup Law, repealing the previous act of 1905, was also enacted in order to take care of developments since the original act was passed.

## MERGER OF TWO BUREAUS INCREASES EFFICIENCY

On April 1, 1924, the present Bureau of Foods and Chemistry was formed by the merger of the Bureau of Foods which was charged with the enforcement of all the food laws, and the Bureau of Chemistry which enforced the laws relating to the sale of agricultural products such as fertilizer and feeding stuffs. Previous to the merger, each Bureau had its own agents in the field and maintained separate administrative officers and personnel. This led to some duplication and unnecessary expense in field work. It was thought that the merger would eliminate this and bring a more economical and efficient service. The work during 1925, the first complete year under the merger, gives ample proof of the efficiency of the combined Bureaus.

**Field Activities.** The field activities were so arranged that the State was divided into fifteen districts for inspection purposes. To each district was assigned a special agent, except the districts comprising Philadelphia and Pittsburgh which are each in charge of a General Agent who supervises the work of additional agents. The merger of the Bureaus, therefore, has made it possible to avoid duplication of field work since each agent obtains samples of all products coming within the scope of the several laws and submits them to the chemist for analysis.

The administrative work, upon the retirement of Mr. James Foust, who, on July 1, 1925, completed twenty-five years of untiring and faithful service as Director of the Bureau of Foods, was centralized in the main office of the Bureau.

## BUREAU'S WORK A GOOD INVESTMENT

The extensive scope of the Bureau's work in protecting the people from the dangers of impure and injurious foods and beverages and the farmers from adulterated and misrepresented agricultural products, marks it as one of the best investments made for the public of the Commonwealth. During the past 19 years, the Bureau, (Two Bureaus before the merger, April 1, 1924), analyzed 193,803 samples of foods and agricultural products, successfully terminated 20,769 prosecutions in the courts, collected in fees, fines and licenses, \$6,772,079.23 and expended during the same period only \$2,100,625.20.

**Foods.** In 1925, a total of 8,867 food samples were analyzed, the largest number since 1915 and 1,358 prosecutions, 163 more than in any previous years, were successfully terminated. The reason for the greater number of prosecutions in 1925 in spite of great improvement in the food supply is that very close check-ups were made on special classes of foods as a result of the numerous new laws passed recently.

**Agricultural Products.** In the enforcement of laws regulating the sale of agricultural products, a year as successful as in the enforcement of food laws can be reported. During the year, 4,304 samples of fertilizers, feeding stuffs, lime products and other agricultural products were analyzed and 270 prosecutions successfully terminated. While the number of samples analyzed was not quite as large as in 1924, there were almost 100 more prosecutions.

Table 5 shows the notable advancement in the scope and effectiveness of the law enforcement relating to food and agricultural products since 1907.

**TABLE 5. Samples Analyzed, Cases Terminated, Receipts and Expenditures in Enforcing Pure Food and Other Laws Relating to Agriculture, Calendar Years 1907 to 1925**

Year	Samples Analyzed			Cases Terminated			Total Receipts	Total Expenditures
	Foods	Agricultural Products	Total	Foods	Agricultural Products	Total		
1907	7,400	1,211	8,611	664	54	718	\$56,361.63	\$81,624.44
1908	8,300	2,520	10,820	300	127	427	57,933.62	89,183.36
1909	6,200	2,450	8,650	797	61	858	89,112.15	99,903.76
1910	5,594	2,360	7,954	667	76	743	113,990.95	93,774.03
1911	8,200	1,413	9,613	1,029	45	1,074	122,880.48	96,599.03
1912	7,204	1,711	8,915	1,049	46	1,095	138,168.49	96,377.20
1913	6,846	1,676	8,522	1,025	25	1,050	175,225.76	90,742.18
1914	4,827	2,491	7,318	1,010	30	1,040	227,491.03	89,680.80
1915	8,939	2,254	11,193	1,165	26	1,191	280,773.40	102,910.16
1916	5,807	3,040	8,847	1,093	117	1,210	332,160.53	97,018.70
1917	8,701	4,143	12,844	1,169	116	1,285	408,148.73	102,187.58
1918	6,643	3,678	10,321	1,133	64	1,197	518,215.37	104,811.75
1919	6,851	4,191	11,042	1,607	263	1,210	580,582.82	121,169.43
1920	7,722	3,700	11,422	1,033	111	1,144	667,441.50	143,713.05
1921	7,422	4,310	11,732	1,031	83	1,114	656,133.01	140,367.16
1922	6,543	4,295	10,838	1,014	81	1,095	548,479.71	146,050.26
1923	6,693	3,881	10,574	1,195	128	1,323	536,331.92	128,330.61
1924	6,466	4,950	11,416	1,194	173	1,367	528,352.61	128,803.99
1925	8,867	4,304	13,171	1,358	270	1,628	*734,295.52	144,377.71
Total	135,225	58,578	193,803	18,933	1,836	20,769	\$6,772,079.23	\$2,100,625.20

\*Includes \$174,070.09 for 1684 oleomargarine licenses for 1926.

## STANDARD OF FOOD SUPPLY GREATLY IMPROVED

The quality of the food supply for the more than 9,000,000 residents of the Commonwealth has been greatly improved during the past few decades. In contrast to twenty-five years ago, when oleomargarine was widely sold as butter for butter prices, when the practice of "embalming" milk by the use of preservatives such as formaldehyde was common, when even the more staple groceries were frequently misbranded, the food supply in Pennsylvania today is the purest in the history of the State.

While 15 per cent of the food samples collected in 1925 were found to violate law, it must be remembered that these samples were selected because of suspicion. This means that the per cent of all food offered for sale in the State that actually violates law is extremely small. Probably 99 per cent of the general food supply exceeds the requirements of the law. The great value of the constant vigilance by food officials and the resulting prosecutions is to keep this standard high by controlling the few irresponsible dealers.

## QUALITY OF FERTILIZER IMPROVES

Statistics indicate a noticeable improvement in the quality of fertilizer offered for sale during 1925. The change is probably due in part to the recent amendment to the State Fertilizer Law which prohibits the sale of fertilizer containing less than 14 per cent total plant food. While the amendment did not become effective



tive until January 1, 1926, manufacturers and dealers probably anticipated it and made an early shift to the higher grade brands. High-grade fertilizers contain more plant food and less filler than low-grade brands. Therefore, buying this grade is a saving to the farmer, especially in freight rates and in haulage, because it makes it unnecessary to spend money for excessive filler which the farmer can supply more cheaply himself.

Another valuable feature of the recent amendment is the fact that the number of brands of mixed fertilizer will be greatly reduced and farmers will find it less confusing to make purchases. Still another feature is the fact that the law as amended will enable farmers desiring to purchase fertilizer for tobacco to have the assurance that such special brands will not include potash in the form of chlo-

NUMBER OF PROSECUTIONS FOR VIOLATION OF THE OLEOMARGARINE LAW  
1908 TO 1925

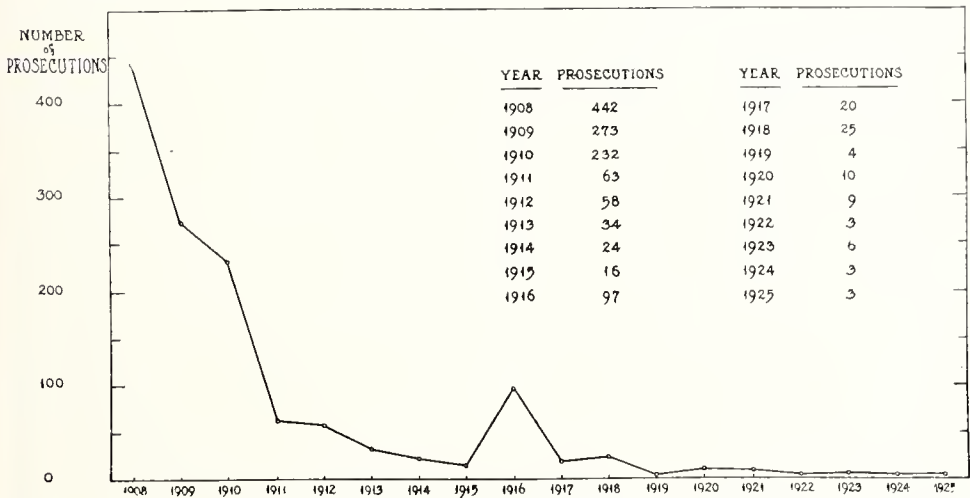


Fig. 4. Showing the greatly reduced number of violations of the oleomargarine law since 1908.

rides. This is extremely important since it has been demonstrated that potash in the form of chlorides in fertilizer injures the burning quality of tobacco.

### ILLEGAL PRACTICES UNEARTHED

Among the 1,358 prosecutions of food dealers ordered during 1925, were the following fakes and misrepresentations. Butter pound cake which contained no butter was being advertised and sold in Philadelphia. The responsible party was prosecuted and the practice stopped. A vast quantity of candy, totally unfit for food, was found in storage and destroyed. Dried fish were found preserved with boric acid. A number of persons were prosecuted for selling cakes, muffins and noodles which were artificially colored with a coal tar dye. Forty-three cases were discovered where ground meat of doubtful character was being preserved with sulphur dioxide and sold as fresh meat. In a close check-up on egg dealers, 271 sales were unearthed where the "fresh" eggs were stale and unfit for food.

Table 6 shows the number of food samples analyzed and the percentage of samples for which prosecutions were ordered in enforcing pure food laws in Pennsylvania for the years 1908-1925 inclusive.

TABLE 6. Food Samples Analyzed and the Percentage of Samples for which Prosecutions were Ordered in Enforcing Pure Food Laws in Pennsylvania, Calendar Years 1908-1925

	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	Totals
<b>Milk</b>																			
Samples Analyzed -----	1,573	3,116	1,893	3,990	3,621	3,291	2,361	5,670	3,217	5,573	4,488	4,069	2,754	3,177	3,102	2,859	2,565	3,782	61,461
Prosecutions -----	27	126	69	371	300	290	224	494	283	548	639	612	335	232	250	363	330	335	5,888
Per Cent Violations -----	1.4	4.0	3.6	9.3	8.3	8.8	9.5	8.7	8.8	9.8	14.2	14.9	12.2	9.2	8.1	12.7	12.7	8.9	9.6
<b>Cream</b>																			
Samples Analyzed -----	754	1,078	526	1,189	890	684	300	1,156	707	1,300	821	779	496	698	600	584	579	679	13,910
Prosecutions -----	0	0	27	151	88	86	27	131	58	124	99	76	43	36	32	43	22	16	1,059
Per Cent Violations -----	0.0	0.0	5.1	12.7	9.9	12.6	6.9	11.3	8.2	9.5	12.1	9.8	8.7	5.2	5.3	7.4	3.8	2.4	7.6
<b>Ice Cream</b>																			
Samples Analyzed -----	26	266	251	238	385	266	358	366	162	332	395	230	244	376	339	164	175	185	4,933
Prosecutions -----	21	39	63	30	48	49	87	41	12	17	40	25	19	3	27	6	3	11	541
Per Cent Violations -----	80.8	14.7	17.9	12.6	12.5	13.4	24.3	11.2	7.4	5.1	10.1	10.9	7.8	0.8	8.0	3.7	1.7	6.0	10.9
<b>Butter</b>																			
Samples Analyzed -----	770	974	951	261	532	429	150	265	338	132	509	208	304	330	190	167	121	179	6,810
Prosecutions -----	6	0	13	1	4	9	3	1	6	4	40	11	8	11	51	29	11	35	243
Per Cent Violations -----	0.8	0.0	1.4	0.4	0.8	2.1	2.0	0.4	1.8	3.0	7.9	5.3	2.6	3.3	26.8	17.4	9.0	19.6	3.6
<b>Oleomargarine</b>																			
Samples Analyzed -----	444	639	515	176	171	102	71	81	125	77	81	9	10	11	4	6	4	4	2,590
Prosecutions -----	422	273	232	63	58	34	24	16	97	20	25	4	10	9	3	6	3	3	1,302
Per Cent Violations <sup>1</sup> -----	95.0	39.1	45.0	35.8	33.9	33.3	33.8	19.8	77.6	25.9	30.9	44.4	100.0	81.8	75.0	100.0	75.0	75.0	50.2
<b>All Food Products</b>																			
Samples Analyzed -----	8,300	6,200	5,594	8,200	7,204	6,846	4,827	8,939	5,807	8,701	6,043	6,851	7,722	7,422	6,543	6,693	6,466	8,867	127,825
Prosecutions -----	300	797	667	1,029	1,049	1,025	1,010	1,165	1,093	1,169	1,133	1,007	1,033	1,031	1,014	1,195	1,262	1,358	18,337
Per Cent Violations <sup>2</sup> -----	3.6	12.9	11.9	12.5	14.6	15.0	20.9	13.0	18.8	13.4	17.1	14.7	13.4	13.9	15.5	17.9	19.5	15.3	14.3

<sup>1</sup>Violations, technical, selling without licenses etc., 1920-1925 inclusive.

Violations for preceding years probably largely of the same character. All Violations with the exception of Oleomargarine were essentially adulteration and deficiency.

<sup>2</sup>The samples which actually constitute violations of the pure food regulations are an extremely small percentage of all the foods offered for sale in Pennsylvania. Because of the fact that all samples taken by the food agents are selected with great care the number of violations is surprisingly low and is evidence of the general observance of the pure food regulations.

TABLE 7. Analyses, Etc., of Fertilizers, Feeding Stuffs, Lime Products, Paints, Turpentine, Etc., Department of Agriculture, Pennsylvania, Calendar Years 1916-1925

	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	Total to Date
<b>Fertilizers.</b>											
Samples analyzed	683	1,717	1,743	1,932	1,637	1,913	1,968	1,247	1,741	2,089	16,670
Brands represented (Spring)	---	736	640	625	676	627	751	455	467	---	5,007
Brands represented (Fall)	414	273	367	503	390	557	427	372	---	---	3,303
Brands registered	1,408	1,610	1,115	1,651	1,692	1,771	1,588	1,708	1,381	1,199	15,183
Samples deficient	61	283	438	492	423	203	287	249	304	---	2,740
Proportion deficient (%)	8.9	16.5	25.1	25.4	25.8	10.6	14.6	14.3	21.6	---	218.1
Registration fees	\$24,355	30,130	25,330	33,540	34,050	35,145	50,004	35,310	28,665	23,995	\$301,134
Fines received <sup>3</sup> (\$25 each)	\$ 1,875	1,200	475	1,476	1,800	1,250	640	400	950	3,075	\$ 13,101
<b>Feeding Stuffs.</b>											
Samples analyzed	11,411	1,368	1,312	1,365	1,378	1,954	1,714	2,037	1,803	1,619	15,981
Brands represented	1629	655	601	652	662	862	777	1,136	771	---	6,735
Brands registered	2,318	2,267	2,435	2,401	2,712	3,502	2,248	3,569	3,115	3,105	27,672
Samples deficient	1191	124	133	125	145	166	99	168	67	---	1,218
Proportion deficient (%)	17.4	11.0	12.9	12.8	14.3	12.1	8.2	12.3	6.3	---	211.9
Registration fees	---	---	---	---	---	20,025	56,200	63,423	53,403	55,674	\$248,725
Fines received <sup>3</sup> (\$50 each)	\$900	1,750	1,750	1,850	3,300	1,200	900	2,900	3,350	4,150	\$ 22,050
<b>Lime Products</b>											
Samples analyzed	1204	146	149	242	140	186	183	161	126	188	1,725
Brands represented	177	50	45	66	40	59	45	19	42	---	6,443
Brands registered	28	181	170	187	171	179	179	180	205	190	1,668
Samples deficient	164	80	68	59	35	52	50	53	36	---	497
Proportion deficient (%)	139.3	62.0	49.3	31.5	41.7	44.1	48.1	48.2	48.6	---	245.9
Registration fees	\$1,125	1,380	1,230	1,385	1,630	1,255	1,270	1,225	1,410	1,315	\$ 12,925
Fines received <sup>3</sup> (\$10 each)	---	30	40	170	80	50	76	40	120	120	\$ 720
<b>Paints, Oils, Turpentine and Putty.</b>											
Samples analyzed	1107	255	55	102	179	49	164	183	59	120	1,324
Samples adulterated	113	11	9	8	4	2	12	3	1	---	63
Proportion adulterated (%)	47.8	4.4	17.3	7.9	2.2	4.5	7.6	1.7	2.0	---	26.2
Fines received	\$100	175	275	125	50	150	275	50	25	150	\$ 1,375
Number of prosecutions	2	5	9	4	1	5	11	2	1	5	45

<sup>1</sup>Official and Special samples. <sup>2</sup>Includes Spring and Fall Inspections. <sup>3</sup>Figures not available at time of reporting. <sup>4</sup>Fertilizer field inspection work curtailed and number of samples decreased by reduced appropriation. <sup>5</sup>Average percentages. <sup>6</sup>Fines included non-registration and deficiency cases.



## PUBLISHED REPORTS HAVE DISTINCT VALUE

The publication of reports on fertilizer and feeding stuffs to give the public all essential facts regarding the actual analysis of these products and how they compare to the guarantees, is a regular feature of the Bureau's work. Pennsylvania farmers purchase about \$50,000,000 worth of feeds and over \$10,000,000 worth of fertilizer each year. Having available published records of actual analyses of both feeds and fertilizers protects the reputable dealer as well as the farmer from unscrupulous manufacturers. The individual purchaser is almost helpless in detecting any deficiency or misrepresentation of either feeds or fertilizers. Having the State analyses as a guide, he is able to avoid misrepresented goods and save money by purchasing materials of known quality. The published reports are given wide distribution among farmers, wholesale and retail dealers, and manufacturers.

Table 7 gives in a brief summarized form the results of the enforcement of the laws relating to agricultural products since 1916.

### NEW LAWS RIGIDLY ENFORCED

The four laws, passed at the Session of 1925, as well as all former laws, are being rigidly enforced.

Five special agents, all of them having bottling plant experience, were employed to carry out the field work necessary to the enforcement of the **Carbonated Beverage and Still Drink Law**, which provides for the sanitary bottling of "soft drinks."

This law was sponsored by the industry itself and a provision for a license fee was incorporated so that all expenses necessary to the enforcement of the law could be met. Each agent was assigned a district comprising several counties, and instructions were given to make a careful inspection of all beverage plants as to proper equipment, general cleanliness and sanitary conditions, and to purchase samples for examination. The effectiveness of the work of these agents is shown by the fact that, while on the job only a few months, they made 1,130 inspections and educational visits to the beverage plants in their respective districts, closed 42 plants because of the unsanitary conditions found to exist in them and instituted 39 prosecutions against those who failed to meet the requirements of the law. This work puts an end to the filthy bottling of soft drinks in cellars with machinery that was seldom washed. It insures the public that the bottled soft drinks coming from Pennsylvania plants in the future are wholesome and free from the dangers of contamination so frequent in the past.

The **New Milk Testing Law**, which became effective August 4, 1925, supplementing a previous similar act, made more effective this service and gave milk producers greater protection by requiring all persons and plants purchasing milk and cream, regardless of the method of settlement, to hold permits. It further requires that all persons making tests for milk being sold on the basis of the butter fat content, shall be qualified for this work and obtain licenses. It also provides a heavy penalty for the fraudulent reading of tests or in making fraudulent payments in settlement.

While only one field agent was previously employed, three dairy experts were employed in 1925 and assigned to three districts in the State in order to supervise the activities of the milk plants, receiving stations and persons coming within the scope of the requirements of the law. This law has put an end to abuses which have existed in the past in the weighing and testing of milk and cream. Such abuses were due either to carelessness, ignorance of testers, or wilful crookedness on the part of buyers. Examination of men who have been or desire to become weighers, samplers or testers has revealed many who are totally unqualified for the work. One applicant could neither read nor write. During the portion of the year in which this law was effective, a total of 58 prosecutions were successfully terminated in the courts. The charge for permits and licenses yields a revenue which meets the expenses of enforcing the law.

The Milk Container Law, which requires that all milk sold for drinking purposes in restaurants, hotels, etc., to be served in the bottles in which supplied, has been very successfully enforced. While 121 prosecutions were necessary, the close inspection of eating places throughout the State indicates that the requirements of the law are being readily accepted and complied with. The result is that the public of the Commonwealth is protected from the former, common practices of dipping, pumping, drawing from spigots and other unsanitary ways of serving milk. Likewise, the practice of removing butterfat from milk or adding water after the supply leaves the producer or distributor and before it is consumed, is eliminated.

The Oyster Law, effective since May 16, 1925, requires the sale of oysters by numerical count. This is a great benefit to the public since it eliminates the sale of watered oysters, and simplifies law enforcement. Instances have been known in the past when oysters retailing at 70 to 90 cents a quart contained from 30 to 40 per cent added water. Selling oysters by count has been the practice in Philadelphia for more than twenty-five years. Pittsburgh has also followed the practice to some extent. Close supervision over the sale of oysters throughout the State indicates practically a 100 per cent compliance with the new law so that very few prosecutions have been necessary.

#### FIELD AGENTS ALWAYS ON JOB

The field agents are always on the job. While they do not wear uniforms, they are officers who enforce the law and are constantly searching out business places of doubtful character in the interest of the public. Although not over-looking modern, progressive food dealers in the more prosperous districts, they give special attention to districts, where unscrupulous dealers are likely to prosper at the expense of the poor and uninformed who are not always in position to protect themselves.

**Inspections.** The extent of field agents' work is shown by the following figures: During the year their inspections and investigations totalled 36,389; they made 25,863 visits with the trade, giving

instructions and doing other educational work; they investigated 554 complaints and made 432 visits to cold storage and egg opening plants; they collected 1,110 samples of feeding stuffs, 2,888 samples of fertilizer and lime and 8,902 samples of food products; and last but not least, they successfully prosecuted 1,628 cases where products were being sold in violation of the law.

**Educational Visits.** The 25,863 educational visits by the field agents were to instruct the trade regarding the requirements of the various laws. The 554 complaints investigated were from boards of health, physicians, and from citizens throughout the State. The 432 inspections of cold storage and egg opening plants were (in the case of cold storage warehouses) to examine records, to observe the sanitary condition of the plants and of the products stored, to discover the way the products were marked, and to ascertain if all other provisions of the Cold Storage Law were being complied with.

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## BUREAU OF MARKETS

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Pennsylvania has over 9,000,000 consumers, of which about 900,000 live on farms. The annual production from these farms aggregates several hundred million dollars and to a large degree these products are absorbed by the numerous markets within the State. Nearness to consumers and low cost of marketing are assets possessed by practically every Pennsylvania farm.

Present marketing methods are the result of years of development; improvements can not be achieved by revolutionary changes. Progress will be made chiefly by the location and elimination of defects, and by the continued development of home markets for Pennsylvania farm products.

**Scope of Work.** The present activities of the Bureau of Markets are designed to assist in the correction of specific marketing problems in which a public agency can best render service. Among these are:

1. The collection and wide distribution of market information to producers and consumers as to the supply, demand, quality and price.
2. The standardization of farm products through the maintenance of various forms of inspection service such as shipping point inspection of fruits and vegetables, accredited hatchery work, and the encouragement of the grading of wheat, hay and eggs.
3. Studies of market requirements as to quantity and quality, in order to aid Pennsylvania producers to further utilize their unexcelled local markets.
4. Assistance in the organization and operation of cooperative associations, public markets and other organized efforts toward the improvement of marketing conditions.



## MARKET REPORTS AID PRODUCERS AND CONSUMERS

Market reporting is carried on by the Bureau at Lancaster, Scranton and Wilkes-Barre and in cooperation with the U. S. Department of Agriculture at Philadelphia and Pittsburgh. The preparation of reports covering local market prices and conditions and the distribution of such reports through the daily papers is the chief activity of these market reporting offices. This service has been a great aid to farmers, distributors and consumers as it makes it possible for them to keep in close touch with the market and to take advantage of favorable conditions.

Distinct progress has been made during the year, especially in the increased use of reports intended for newspaper publication. During December, newspapers having a daily circulation of approximately 2,000,000 copies were regularly publishing the reports issued by the Bureau.

**Livestock.** With the restoration of the leased wire at the Lancaster office, after a discontinuance of approximately a year, service at that livestock market has been restored to its original basis. Lancaster is one of the largest livestock markets in the East and by means of the leased wire, it is possible to maintain a prompt and complete contact with other markets. The Bureau's office reports daily on the receipts, sales and prices and the information is given wide distribution by wire and by the press.

**Special Radio Reports.** A new type of radio report, "Marketing Hints for Housewives," has been broadcasted from Station WIP at Philadelphia on Monday during the entire year. The purpose of this report is to inform housewives of market conditions especially of perishables and to give them information which will be of value in the purchasing of food stuffs. For example, when market conditions are most favorable for the purchase of certain fruits for canning, this information is broadcasted as well as other timely advice on how and when to buy and how to use the more common food stuffs. Frequent checks have been made during the year and an average of 75 replies from housewives have been received eachtime with the largest number amounting to 300 in one case. Because of the success of this report at Philadelphia, a similar service has been started at Pittsburgh in connection with Station KDKA.

**Wheat and Flour Reports.** Early in the year, the Bureau began to collect and distribute a weekly report on the prices of Pennsylvania wheat and flour at the request of the Pennsylvania Millers' Association. This report also carried a feed and hay market review and items of interest regarding grain and grain products in other countries. While still in the experimental stage, the cooperation which is being given by the millers indicates that this report is of value to them in the marketing of flour made from Pennsylvania-grown wheat.

As in previous years, a large portion of the market reporting work is carried on in close cooperation with the United States Department of Agriculture and with the State Bureaus of Markets in New Jersey and New York. In all cases, these relations have resulted in more efficient and more economical handling of material without duplication or unnecessary expense.

## FRUIT AND VEGETABLE MARKETING

In order to determine the sources of competition in the production and marketing of fruits and vegetables and the extent of local consumption, the Bureau has been keeping a record showing the carlot unloads of fruits and vegetables in 15 important cities of the state since 1921. These records show the quantities of such fruits and vegetables which are received from other producing states and so emphasize the possibilities which are open to Pennsylvania growers if they are able to produce the quality and grade of product now being received from other sources.

**The Potato Market.** A continued effort has been made during the past few years to encourage the use of Pennsylvania-grown potatoes within the markets of the State, especially in replacing supplies from distant territories on which high freight charges are paid. As an example, freight charges to the Philadelphia market on potatoes from any section of Pennsylvania amount to not more than 20 cents per bushel, whereas the rate from Maine is 36 cents, from Michigan 35 cents, from Wisconsin 39 cents, and from Minnesota 48½ cents per bushel.

Crop conditions during 1925 were especially favorable to Pennsylvania potato growers as the production was of average size and good quality within the State while the crop for the entire United States was abnormally small. As a result an unusual demand for Pennsylvania potatoes resulted in high prices and heavy shipments, which amounted to 6,308 cars as compared with 4,250 during 1924. While a considerable amount of this increased movement left the State, 500 more cars were used in the markets from which records are available than in 1924, and 1,200 more than in 1923.

Despite this gain, in the use of Pennsylvania potatoes, over 5,000 carloads were brought in from competing states, all of which are at a long distance from Pennsylvania markets with the exception of New York State. If the potato growers of the state follow up the advantage which they have secured with the 1925 crop, they should be able to steadily reduce this volume of potatoes received from other producing districts.

**Fruits and Vegetable Marketing.** Unusual crop conditions affected the marketing of a number of the more important fruits and vegetables during the year. While the situation with regard to potatoes has been previously mentioned, a similar condition prevailed in the case of cabbage and shipments of this commodity were heavy during the year, especially from Erie County.

The apple crop of the State was of substantially the same size as in 1924 but market conditions were the opposite of those prevailing in that season, to a very large degree because of the exceptionally heavy storage stocks over the entire United States. Because of winter injury, there was only a small peach crop and a very large proportion of it was sold to local markets at very high prices. Similar conditions prevailed in the commercial grape area of Erie County as the production in that district was approximately half of a normal crop.

A brief summary of the facts regarding receipts at these fifteen markets and shipments from all points in the State is given in Table 8.

TABLE 8. Receipts and Shipments of Fruits and Vegetables

FRUITS		1923	1924	1925
APPLES				
Cars unloaded in 15 markets	-----	7,434	6,872	5,833
From Pennsylvania	-----	840	519	449
From New York	-----	2,544	2,496	2,381
From Washington	-----	2,111	1,982	1,538
From Virginia	-----	464	652	458
Cars shipped from Pennsylvania	-----	3,500	1,917	2,345
GRAPES				
Cars unloaded in 15 markets	-----	7,565	8,309	9,393
From Pennsylvania	-----	250	229	62
From California	-----	5,662	5,998	8,378
From New York	-----	1,068	1,640	855
From Delaware	-----	48	58	44
Cars shipped from Pennsylvania	-----	847	1,166	591
PEACHES				
Cars unloaded in 15 markets	-----	2,136	2,803	2,673
From Pennsylvania	-----	154	102	37
From New York	-----	435	221	412
From Delaware	-----	60	103	48
From New Jersey	-----	86	92	122
Cars shipped from Pennsylvania	-----	615	451	199
VEGETABLES				
CABBAGE				
Cars unloaded in 15 markets	-----	4,231	4,229	4,038
From Pennsylvania	-----	147	132	236
From New York	-----	1,878	1,874	1,852
Cars shipped from Pennsylvania	-----	312	295	642
CELERY				
Cars unloaded in 15 markets	-----	2,035	2,431	2,555
From Pennsylvania	-----	105	152	86
From New York	-----	547	757	936
From Michigan	-----	63	41	45
Cars shipped from Pennsylvania	-----	223	225	208
ONIONS				
Cars unloaded in 15 markets	-----	3,171	3,591	3,501
From Pennsylvania	-----	65	47	9
From New York	-----	757	910	1,219
From Ohio	-----	388	616	346
From Massachusetts	-----	227	330	341
From Indiana	-----	328	331	293
Cars shipped from Pennsylvania	-----	91	72	54
POTATOES				
Cars unloaded in 15 markets	-----	16,974	15,719	15,337
From Pennsylvania	-----	2,258	2,949	3,427
From New York	-----	1,876	2,361	2,499
From Maine	-----	1,581	1,097	2,098
From Michigan	-----	2,168	1,256	604
From Wisconsin	-----	998	278	142
From Minnesota	-----	367	82	29
Cars shipped from Pennsylvania	-----	3,599	4,250	6,308

**Shipping Point Inspection.** For the third successive year, Federal-State shipping point inspection of apples was carried on in Adams, Cumberland and Franklin Counties. Owing to the small size of the peach crop, no inspections of this commodity were attempted. The work during the year covered a larger number of shipping points than in any previous year. The inspection is voluntary with the grower and a fee is charged which covers approximately 85 per cent of the cost of the service. The success of this inspection is indicated by the fact that in no case during the three years of operation has the original grade at shipping points been reversed upon reinspection in the terminal market. Table 9 gives the number of cars inspected and the per cent grading U. S. No. 1 for 1923, 1924 and 1925.



TABLE 9. Shipping Point Inspection of Fruits and Vegetables, 1923-1925

	1923	1924	1925
Number of Cars Inspected			
Apples -----	234	109	304
Peaches -----		72	
Potatoes -----	4	15	27
Total -----	238	196	331
Graded U. S. No: 1			
Apples -----	71%	64%	79%
Peaches -----		84%	
Potatoes -----	50%	52%	62%
Inspection Points -----	8	10	12

This inspection work is a service which aids producers, sellers, and consumers alike. It aids producers in that it makes standard grades effective. It makes more certain the acceptance of f. o. b. sales by the buyer. It improves quality of products and reduces wastes in marketing. It is an advantage to the carrier in that it makes possible a fairer adjustment of freight claims on shipments of fruits and vegetables. This service renders valuable protection especially to fruit growers.

The development of Federal and State shipping point inspection during the past four years has been one of the most outstanding improvements in the vegetable and fruit industry. The cooperation of the fruit growers of Pennsylvania made it possible for the Bureau to participate in this important step toward standardization.

**Advertising.** In cooperation with the State Horticultural Association the Bureau assisted in the preparation and distribution of advertising material, featuring Pennsylvania apples. This work was a continuation of the start made the previous year and practically 25,000 recipe books, posters and price cards have been sold to fruit growers by the association for use in advertising Pennsylvania apples.

### PROGRESS IN WHEAT MARKETING

Investigations in wheat marketing were undertaken by the Bureau in 1920. These investigations are unique. No other state has gone into the actual wheat marketing channels, especially the terminals and gained the facts revealed in this study. Pennsylvania wheat producers had been gradually losing their home market to western growers because their wheat has not been meeting the requirements for commercial bread making. Too many varieties of wheat, lack of uniformity in texture, the presence of garlic and the damage by the Angoumois grain moth, all combined to make the flour, milled from such wheat, quite unsatisfactory for making the best bread. This condition was partly the consequence of the millers or dealers disregarding grade when purchasing wheat from farmers. Such a policy resulted in placing a premium on the production of poor quality wheat. Coupled with this policy of local purchase was the mixing of different grades and textures of wheat in making up carload shipments.

**Types of Wheat.** Pennsylvania grows two distinct types of wheat. The dark, vitreous type, such as Pennsylvania 44, Fulcaster and Leap's Prolific, has a high protein content for soft winter wheat.

Flour milled from this type of wheat has exceptional qualities for pretzel manufacture and when blended with an equal proportion of spring wheat makes a flour equal to or superior to any other flour used by the baking trade for bread purposes. The soft, starchy type such as Red Wave, when milled alone is of special value for pastry and cracker manufacture. These two types should never be milled together since the resulting flour is inferior for either bread or pastry use. The market for the blended flour for bread purposes is expanding and it is expected that a wide use of this flour by the baking industry of the State will give producers of hard texture wheat a dependable outlet. Special emphasis has been placed on the development of an outlet for flour from Pennsylvania wheat at the State Institutions. During May, 1925, special demonstrations of the use of this type of flour were made at fourteen institutions in all sections of Pennsylvania. The results of this work have been

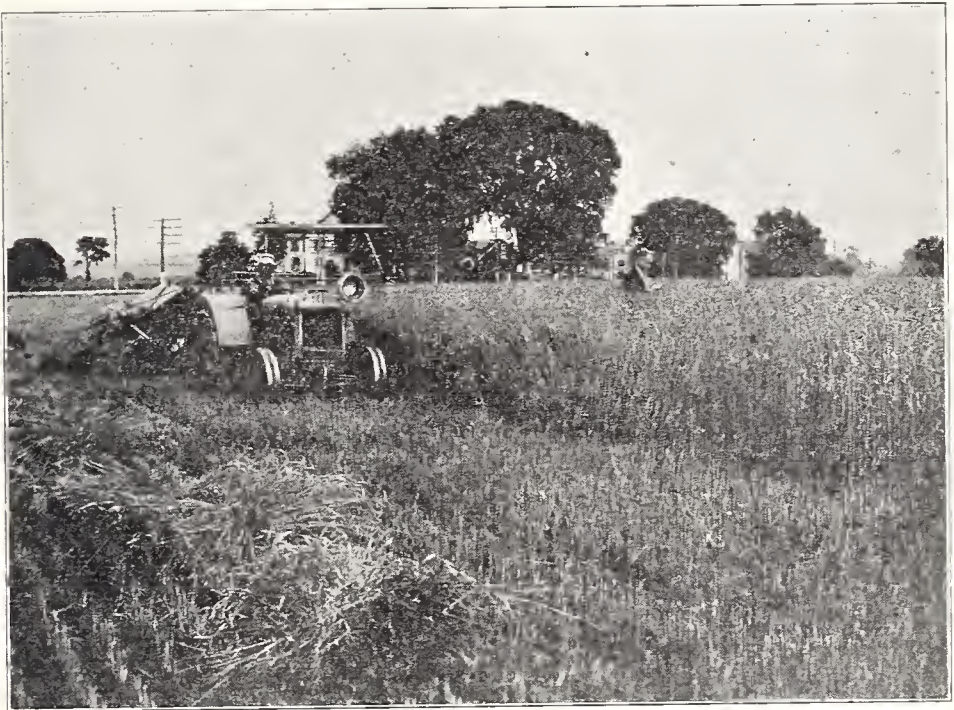


Fig. 5. Harvesting Forward Wheat in Lancaster County, Pennsylvania.

very satisfactory and the new specifications for flour for use in the state institutions will make it possible to supply flour made from Pennsylvania wheat in fair competition with the previous sources of supply.

The work in interesting bakers in the use of Pennsylvania flour has been continued and has met with success. At the present time, an increased number of mills are milling a satisfactory blended flour for bread purposes and a number are developing a special pastry flour from the soft textured wheat for pastry purposes. As far as is known, every miller who has endeavored to develop this type of flour of good quality has found a profitable and growing demand for the product. The flour from the hard texture wheat, unblended, has proven very satisfactory in pretzel manufacture.



**Terminal Market Records.** During the year the records of the grade of wheat received at the Philadelphia and Baltimore markets have been maintained as in previous years. This information indicates that there has been a steady decline in the number of cars shipped to these terminal markets although there has been no appreciable reduction in the size of the wheat crop for the State. It seems reasonable to assume that this decrease has largely resulted from increased milling of local wheat in Pennsylvania and from the shipment of wheat to millers outside the state without entering the terminal markets.

Table 10 shows the number of carloads of wheat received at the Philadelphia and Baltimore terminals during the six years, 1920-1925, and the per cent of these cars which were reduced in grade because of the various grading factors.

**TABLE 10. Carload Receipts of Wheat at Philadelphia and Baltimore Terminals and Influence of Grading Factors**

	1920	1921	1922	1923	1924	1925
No. of cars .....	1,601	1,418	1,525	862	488	610
% of ears reduced in grade because of:						
Moth .....	15.0%	57.9%	47.4%	43.8%	21.1%	20.8%
Moisture .....	53.2	29.5	76.5	15.9	55.5	57.0
Garlic .....	49.3	46.5	45.8	44.4	45.0	47.3
Cockle (estimated) .....	10.0	10.0	10.0	10.0	10.0	10.0
Wt. per Bushel .....	4.0	16.6	3.1	2.5	10.5	10.0
Smut .....				6.0	10.0	12.6

Pennsylvania-grown wheat when free from impurities, moth infestation, smut, damage, etc., is considered the best soft red winter wheat grown in the United States. However, the analysis of the shipments of wheat to the terminal markets shows that the Pennsylvania farmers still grow a large percentage of wheat falling into the discount grades because of these factors. General Bulletin No. 393 of the Department gives additional information on the problems encountered in marketing Pennsylvania wheat.

**Improving Quality of Wheat.** An effort is being made to improve the quality of wheat grown on Pennsylvania farms. County agents have encouraged farmers to make comparative tests with different varieties, to plant clean seed and to practice moth control methods. The shipments to terminal markets have shown a wonderful reduction in moth infestation and although the percentage of cars grading garlicky remains about the same, there has been a big decrease in the number of garlic bulblets present. Moisture seems to cause the largest loss to farmers. This factor is more or less affected according to yearly weather conditions and farmers do not seem to realize that moisture is a grading factor. Smut has made its appearance in shipments to terminal markets and although the average for the State was only 12.7% "smutty" there are many shipping points which showed wheat grading "smutty" as high as 50%. This is a discount which can easily be avoided by treating the seed before planting or growing only the smut immune varieties.

If the shipments are considered as representative of all the wheat grown in the State then the farmers would lose in discounts approximately two million dollars for the soft grade wheat produced in 1925. This is a big improvement over the year previous when the discounts amounted to approximately three million dollars.



There has been a large increase in the production of the harder texture wheat which mills a stronger flour which the baker can use for bread and pretzels. In 1919 the Federal census reported only 1.8% of the wheat acreage in Leap's Prolific while Pennsylvania 44, Forward and Red Rock were not mentioned. In 1925, Prof. C. F. Noll of the Pennsylvania State College, reported that Leap's Prolific represents 24.6% of the production, Pennsylvania 44 about 20%, Red Rock .4% and Forward 1.6%.

## POULTRY MARKETING ACTIVITIES

In recognition of the importance of the poultry industry in Pennsylvania and the problem encountered in the marketing of its products, the Bureau has undertaken several lines of work in poultry and egg marketing.

While not producing sufficient eggs to meet the demand, the poultry industry is one of the most important farm enterprises in the State. The 17,465,000 chickens were valued at \$22,000,000 and produced 79,000,000 dozen eggs valued at \$29,190,000 in 1925.

**Accredited Hatchery Work.** The most important development in the poultry work of the Bureau has been the inauguration of the accredited hatchery work during the fall of 1925. Experimental tests had been made during the previous season with four flocks and final regulations governing the work were adopted during the summer months. The results have been most encouraging and indicate that the development of this plan in the future will do much to standardize the quality of baby chicks in the State and to reduce losses from preventable diseases.

Flocks are classed as "certified" when they have been inspected by a representative of the Bureau and all culls have been removed from the flock. When the owner desires it, blood samples are taken and are tested at the laboratory of the Bureau of Animal Industry at Philadelphia for bacillary white diarrhoea. All birds reacting to this test are promptly removed from the flocks so as to prevent further infection. After two consecutive annual clean tests of this character, a flock is given a certificate as an "accredited flock." Similar classes of hatcheries have been established depending upon the grade of eggs which are being handled.

**Losses Reduced.** The possibility of reducing disease losses is well illustrated by the results of three tests made in one flock which had experienced serious losses from white diarrhoea. At the time of the first test in the early fall of 1924, 11 per cent of reactors were found. A subsequent test during December of the same year showed that the per cent had been reduced to 7.05 and the third test in the fall of 1925 showed that the percentage had decreased to 5.8.

**Uniform Chicks.** Through this plan it is expected that it will be possible to very largely standardize the quality of the chicks available for sale in the state and thus prevent misrepresentation and misunderstanding in the marketing of such chicks. In addition, it is expected that this work will do much to make the poultry of this State much more uniform in character. In this way, a much more uniform type of egg should be made available for sale on the markets with resultant advantages in price to the producers.

The results of the accredited hatchery work during seasons of 1924-1925 and 1925-1926 to January 1 are given below:

TABLE 11. Accredited Hatchery Work

	1924	1925
Certified flocks -----	4	27
Certified hatcheries -----	1	15
Accredited flocks -----		1
Accredited hatcheries -----		
Varieties inspected -----	2	6
Birds inspected -----	3,100	21,100
Birds certified -----	2,480	17,500
Per cent culls -----	20%	17%
Birds tested -----	990	13,000
Per cent reactors -----	6.8	4.6
Initial inspections -----	4	27
Subsequent inspections -----	14	
Total inspections -----	18	27

**Adjustment of Claims.** Numerous complaints were received by the Bureau from Minnesota and the Dakotas regarding the failure of two commission merchants in Philadelphia to make proper returns for poultry shipped to them on consignment during the holiday season of 1924.

The primary cause of these difficulties has been the willingness of shippers to accept promises of irresponsible and unreliable commission merchants in preference to truthful and honest statements made by reputable dealers. Arrangements were made with the Bureaus of Markets in other states to have a warning issued over most of the United States against shipment to such irresponsible firms.

**Egg Breakage.** Many losses or unnecessary expenses in the marketing of farm products can be corrected and eliminated by more care in the handling of such products. A splendid example of this can be found in the methods of packing eggs to eliminate breakage in transit.

Through the cooperation of the American Railway Express inspectors at New York, copies of all inspections of Pennsylvania shipments which have included breakage have been furnished to the Bureau. An analysis of these inspection reports indicate that an average of four dozen eggs per case were either damaged or lost in transit and that the average amount of such loss was 94 cents per case after proper credit had been given for the sale of stained and cracked eggs.

**Losses Easily Reduced.** Almost without exception, these losses could have been prevented by the use of proper packing material and the established rules for the packing of eggs. Too many shippers endeavor to economize by the use of cheap or second-hand packing material which will not protect the eggs from shocks and blows received during transportation. As a result, a few eggs, only one per cent in these cases, were smashed to such a degree that they could not be salvaged. However, for every egg that was smashed, almost 12 eggs were stained or cracked to such a degree that their market value was seriously reduced with resultant loss to the shipper. As far as possible, personal visits have been made to all egg shippers who have been found to be using improper methods of packing, in an attempt to improve packing methods and reduce the loss from egg breakage.

## COOPERATIVE BUYING AND SELLING

The Pennsylvania membership of cooperative associations aggregates approximately 42,000 or one of every five farmers in the State if duplication in membership is not considered. In 1925, a business amounting to \$35,010,000 was done cooperatively.

**Reports Analyzed.** For the first time since the passage of the Cooperative Act in 1919, a complete and satisfactory set of reports on the activities of the organizations chartered under this law was secured for the year 1924. A complete analysis of comparable reports was made and associations were supplied for the first time with definite information concerning the average rates of expense, margin, inventory, accounts receivable, and capital (as represented by membership notes, indebtedness certificates and surplus) of Pennsylvania organizations.

The reports received from individual associations on the 1925 business show the following facts of interest regarding the cooperative organizations of the state: The majority of them are on a more sound financial basis, their sales show an increase of about 10 per cent, average operating costs have decreased 0.1 per cent and there are fewer deficits as compared with 1924. See Table 12.

TABLE 12. Facts Regarding Pennsylvania Farmers' Cooperative Organizations

ACTIVE COOPERATIVE ASSOCIATIONS INCORPORATED UNDER THE ACT OF 1919.

	1922	1923	1924	1925
Total Sales .....	\$2,481,829	\$3,638,755	\$5,058,784	\$3,794,552*
Number of Associations .....	45	65	74	76
Average Sales per Association .....	\$55,152	\$55,981	\$68,362	\$49,928
Largest Sales for any Association .....	\$684,425	\$943,523	\$1,591,889	\$669,510
Smallest Sales of any Association .....	\$346.80	\$825.86	\$1,354.30	\$511.00
Average operating expense of purchasing associations (% sales) .....		4.2%	3.7%	4.3%
Average operating expense of milk distributing plants (% sales) .....		32.5%	32.7%	31.6%
Average operating expense of creameries (% sales) .....		7.3%	6.9%	10.4%

\*Decrease in 1925 sales due to practical suspension of business by Pennsylvania Farmers' Cooperative Federation.

PENNSYLVANIA BUSINESS OF ALL COOPERATIVE ORGANIZATIONS  
(Local non-stock, local capital stock and interstate)

	1922	1923	1924	1925
Number of members .....	29,020	37,374	41,346	41,990
Total Sales .....			\$32,409,000	\$35,009,680

COOPERATIVE SALES—BY COMMODITIES

	1924 Sales	1925 Sales	1924 % Total	1925 % Total
Milk and Milk Products .....	\$26,284,239	\$29,029,518	81.1 %	82.92%
Fruits & Vegetables .....	1,110,358	1,105,824	3.4 %	3.16%
Eggs .....	100,000	89,910	0.34%	0.26%
Wool .....	65,000	79,183	0.2 %	0.23%
Farm Supplies .....	4,840,403	4,653,744	14.96%	13.29%
Cattle .....		51,500		0.15%
Total .....	\$32,409,000	\$35,009,680	100.00%	100.00%

Seven large cooperatives transacted, for Pennsylvania farmers, \$28,276,381 business in 1924 or 87.5 per cent of the total. In 1925, eight of the leading organizations, transacted \$29,553,787 or 84.4 per cent of the total Pennsylvania farmers' cooperative business.



**Institute of Cooperation.** The most important development of the year in the field of agricultural cooperation in Pennsylvania was the first session of the American Institute of Cooperation which was held at the University of Pennsylvania from July 20 to August 15. The holding of the first session at Philadelphia gave those interested in Pennsylvania organizations a splendid opportunity to become familiar with the development of cooperatives over the entire country. The Bureau gave the Institute every possible assistance both before and during the session.

### LEBANON SURVEY COMPLETED

The material which had been collected in the survey of Lebanon County agriculture made during 1924 was analyzed and prepared for publication as Bulletin 198 of the Pennsylvania State Experiment Station, the project having been carried on jointly with the College, the Federal Department, and local agencies. While Lebanon County farmers are splendidly situated with relation to markets for most of their products, it is evident from the survey that they can make minor adjustments and improvements in their present practices of production and marketing which will be profitable to them.

One of the most striking points brought out by the survey is the opportunity to bring in the competitive influence of the Philadelphia and New York fluid milk markets in the sale of their products which at the present time are used almost exclusively for manufacturing purposes. In order to make such competition effective, it will be necessary for a considerable group of dairymen to place their dairies under city inspection in order to enter the larger markets. In addition, it will be necessary for many dairymen to adjust the quantity of their production on a fairly uniform basis each month before city milk dealers can be interested in using this county as a source of supply despite its nearness to both of the markets named.

The survey also showed that there is ample opportunity for improvement in the production and marketing of eggs, poultry, grain and wheat, so as to net larger returns to the producer. Both the potato and fruit production of the county is approximately equal to the consumption or will be within a few years. Any important increase in production will develop entirely new marketing problems involving the disposal of a surplus of these crops.

### VOCATIONAL SCHOOL COURSES

In cooperation with the Department of Public Instruction, considerable time has been spent on the development of material for use in the teaching of marketing in the vocational high schools of the State. While it will require several years to fully develop the material for such courses, splendid progress has already been made and there is a very strong interest in this work among the teachers of the vocational schools.

## BUREAU OF PLANT INDUSTRY

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Protecting the extensive plant industry of Pennsylvania, which produced important farm crops valued at \$304,852,000 in 1925, from the ravages of certain insects and diseases is the task of this Bureau. The specialists of the Bureau are constantly at work, either in the field or in the laboratory, developing effective control measures and enforcing inspection and quarantine regulations.

Among the insects which have threatened the agriculture and horticulture of the State during the past few years are the Japanese beetle, Oriental fruit moth, European corn borer and Angoumois grain moth. These have all been given special attention by the Bureau and all means available have been put into operation to prevent the spread and curb their heavy annual destruction of crops. Two plant diseases, potato wart and peach yellows, have likewise been given every possible attention in the hopes of eradicating them and progress to date has been most gratifying.

### ORGANIZATION OF THE BUREAU

In order to accomplish most effectively the numerous lines of activity, the Bureau is divided into the following sections: administration, apiary inspection, botany, entomology, nursery inspection and plant pathology. The administrative section has to do very largely with the general administration and necessary clerical work of the Bureau.

### APIARY INSPECTION

There are approximately 30,000 apiaries, comprising approximately 155,000 hives of bees in Pennsylvania, and these produced about 2,600,000 pounds of honey in 1925. The industry represents an investment of over a half million dollars and a revenue in 1925 of over \$600,000. This is in addition to the value of bees in aiding the pollination of fruit trees. It is conservatively estimated that bees bring a net return of \$1.00 per colony when placed in the orchard during the blooming period. When it is recognized that the production of honey in the state from the present apiaries could be greatly increased, even doubled by the elimination of foulbrood disease and the introduction of better beekeeping practices, the economic value of bee inspection and educational work is apparent.

During 1925, the chief apiary inspector and his assistants inspected 398 apiaries, comprising 9,552 colonies. Of these about 5.7 per cent showed disease which, of course, was cleaned up during the course of the inspection. In order to control the disease, it is necessary to have the bees transferred to movable brood frames. Through the careful inspection of apiaries during the past few years, it is evidenced that beekeepers are profiting from the effective control of foulbrood disease.

Another important line of the bee inspection work is that of inspecting twice each year the queen bee establishments within the State. During 1925, 21 queen bee rearing establishments made application and were inspected of which 11 were granted licenses.

TABLE 13. Apiary Inspection Work, 1919 to 1925 Inclusive

	1919	1920	1921	1922	1923	1924	1925
Number of apiaries inspected -----	294	852	1,781	880	371	1,197	398
Number of hives in average apiary -----	28	11.4	10.2	10.7	12	14	24
Number of Colonies inspected -----	8,231	9,714	18,176	9,304	4,475	18,865	9,572
Per cent of colonies diseased -----	6.4	10.8	10.1	7.8	9.0	7.26	5.7
Number of queen apiaries:							
Applications -----	10	12	19	22	21	18	21
Licensed -----	10	12	16	16	12	14	11

## BOTANY SECTION

**Seed Law Enforced.** Enforcing the Pennsylvania Seed Law which is designed to give farmers pure seed free from noxious weeds is one of the important lines of activity carried out by this section. Nine serious noxious weeds are named in the State law which, if present in quantity in grass seed offered for sale in the State, makes the sale of the seed illegal. A total of 587 seed samples was analyzed in 1925. A marked improvement has been noticed during the year in the quality of seed offered for sale. In 1924, approximately 8 per cent of the samples analyzed contained a trace or a number of Canada thistle and dodder seeds, while in 1925, only 3.5 per cent of the samples contained these noxious weeds.

General Bulletin 415 of the Department carries the report of seed analyses for 1925 in addition to other important information on the Seed Law.

More samples were collected from seedmen during 1925 than any of the previous four years. In making these collections, approximately 100 wholesale and retail seedsmen were visited and in addition to collecting the samples the general stock in hand was examined to see if the containers were properly labelled. As a result of this inspection work, seedsmen have made noticeable improvement in their manner of handling the seed stocks, especially with reference to proper labelling and stating of the analysis. While the quality of seeds handled by seedsmen is apparently improving in a very satisfactory manner, observations indicate that farm-grown seeds, those grown by farmers and sold to their neighbors for seeding purposes, are not of high quality. Frequently the germination is low and the amount of foreign matter quite high.

A warning is issued from time to time to farmers throughout the State to buy their seed from reputable seed houses and not depend upon mail order houses outside the State, since the seed law is not effective in the latter case. In many cases, a seed supply of this kind proves to be the most expensive a farmer could possibly have purchased. An illustration of the danger encountered when purchasing seed without knowing the analysis is the following: In the course of the seed analysis work during the past few years, one sample of alsike clover was received and analyzed which contained 25 Canada thistle seeds in two ounces, or over 3,000 seeds per acre at the usual rate of seeding.

TABLE 14. Analyses of Seed Samples, 1921 to 1925 Inclusive

Type of Sample	1921	1922	1923	1924	1925
"A" samples, official samples collected from seedsmen --	5	13	123	239	250
"B" samples, unofficial samples sent in by farmers and seed dealers -----	124	297	262	102	239
"C" samples, special analyses for State departments -----	12	71	49	36	98
Total samples analyzed -----	141	381	434	377	587



**Weed and Plant Identification.** During the year approximately 600 specimens of weeds and plants were received for identification, many of these being weeds sent in by farmers for identification and for suggestions as to eradication or control. In order to increase the general knowledge of weeds and their control, several lines of educational work were undertaken during the year. Eight sets of 30 specimens each of Pennsylvania weeds were collected and prepared for distribution to vocational and agricultural schools. General Bulletin No. 416 describing in detail the 14 worst noxious weeds found in the State and giving effective control measures has also been published.

**Extensive Plant Collections.** In order to facilitate the identification of weed and plant specimens, extensive collections are maintained and added to each year. Approximately 50 new varieties of seeds were added to the seed herbarium which now consists of about 1,300 species. In the weed and plant herbarium 1,200 specimens were added during the year, making a total of approximately 15,000 specimens. About 70 new species were represented in the specimens added during the year, making a total of approximately 1,700 species of Pennsylvania plants now included in the herbarium. In addition to these collections, the private collection of Dr. Adolf Koenig of Edgewood Park, Pittsburgh, was donated by the collector and the collection amounting to about 500 specimens was incorporated in the herbarium.

## ENTOMOLOGY SECTION

The work of the entomology section is concerned with the control of plant insect pests established within the State and the constant scouting for new pests. Two large-scale field projects are conducted by this Section, one relating to the Japanese beetle and the other, the European corn borer. Both of these involve quarantine enforcement and a number of other field problems. Other insects have been made the subject of considerable study including the Oriental fruit moth, Mexican bean beetle and Angoumois grain moth.

### Japanese Beetle Quarantine and Control

An excellent example of the way the Bureau functions in insect control work is that of the Japanese beetle project. This insect was imported from Japan and at present is known to occur only in parts of New Jersey, Delaware and Pennsylvania, surrounding Philadelphia. It was discovered in New Jersey in 1916 and in Pennsylvania in 1920. Since that time, the spread in this State has been from 5 to 15 miles each year. The insect is a destructive pest of orchards, fruits, and shade and ornamental trees. Over 200 different species of plants are known to be attacked by this beetle.

The Japanese beetle work is a joint project with the United States Department of Agriculture and the State Departments of Agriculture of New Jersey, Delaware and Pennsylvania; the field work is directed from the main Japanese beetle laboratory at Riverton, New Jersey, with additional substations in each of the States concerned. Control work is progressing along three lines: (1) The in-

troduction of parasites that live upon the beetle in one or more periods of its life's history; (2) Field and laboratory experiments with insecticides, fumigants, repellents, etc.; (3) Preventing the artificial spread of the insect by the enforcement of quarantines on all farm crops, nursery stock, etc., moving from the infested area.

**Parasites Introduced.** The work of introducing parasites which will destroy the insect in one or another stage of its life history, has made excellent progress. The imported parasite known as *Centator cinerea*, which in Pennsylvania was first released in the vicinity of Torresdale during the summer of 1924, was collected during 1925 in the field, indicating that this parasite is now established in the State. While it is impossible to predict the future rate of development of this parasite, as far as can be determined at the present time, it should develop rather rapidly. In one section of New Jersey, it was found that during the first few days of the beetle season, about 25 per cent of the beetles were parasitized.

In connection with the parasite work, it must be remembered that the outskirts of the infested area will never be heavily enough infested to support parasites.

**Control by Spray.** In the development of control measures the use of arsenate of lead as a spray combined with ordinary flour is recommended as the best protection against beetle attack. Extensive damage has been prevented in many orchards by spraying. The effectiveness of an improved coated arsenate of lead spray, a development of the preceding season's work, has been confirmed by additional experimental work but so far it has not been possible to have this material available commercially. General Bulletins Nos. 390, 406 and 410 have been published by the Department on the life history, habits and control of the beetle.

An attractant material has been developed which it is expected can be used in connection with contact sprays for killing large numbers of beetles. The plan is to attract as many beetles as possible to one or a few objects and then use the contact spray. This economizes both time and spray material.

**Quarantine Enforcement.** Quarantine enforcement involves the following three general lines of work: Scouting, farm products quarantine and nursery quarantine. The scouting work covers an area varying from 15 to 100 miles beyond the infested area of the previous year with additional scouting in the markets of the larger towns beyond. No infestations were found beyond the 1925 quarantine area, except along the southeastern border of Berks County and in the extreme northern section of Montgomery County, and as a result the 1926 quarantine area has been extended only in that direction. Extension of the territory of the 1925 season has been the lowest proportion of extension of any year since the work was established. The present area covers approximately 1,800 square miles, or about 1/25 of the total area of the State.

The farm products quarantine enforcement was carried on in 1925 substantially the same as the previous year with special attention being given to carriers of produce, especially trucks. Experience has shown that the amount of quarantined articles carried by the

general public in pleasure cars is insufficient now to warrant the heavy expenditure of funds involved in the actual stopping and inspection of any considerable portion of the pleasure-car traveling public. This situation is, of course, the logical result of several years intensive inspection and publicity aimed at bringing home to the public mind the necessity of observing the quarantine regulations. The quarantine enforcement involves the inspection of products to be shipped directly from the farm producing them to points outside the quarantine area, the inspection of shipments in the city of Philadelphia, the certification of shipments from farms in the outer borders of the quarantine area and the road patrolling. Some idea of the extent of the certification work is indicated by the fact that 25,190 certificates were issued for the moving of farm products to points outside the quarantined area during the 1925 season. All products move freely into and within the quarantined area.

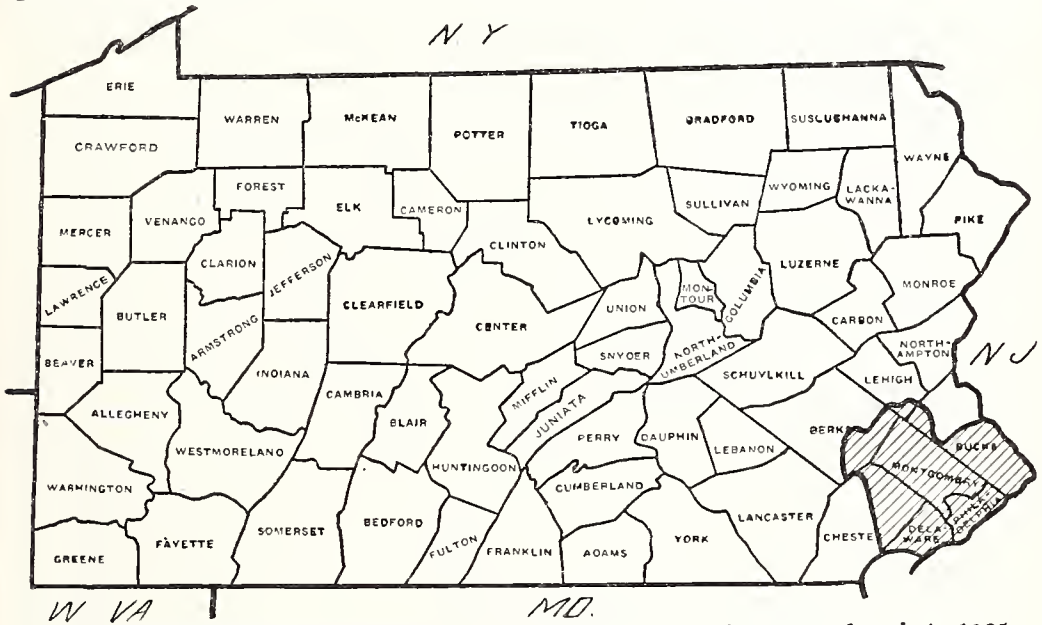


Fig. 6. Map showing distribution of the Japanese beetle in Pennsylvania in 1925.

The mobile road patrol system proved to be a satisfactory type of road supervision in 1925. The purpose of this patrol is to intercept all vehicles such as motor trucks and pleasure cars which are suspected or are known to be carrying products contrary to regulations. Intentional violations of the quarantine were rigidly prosecuted.

During the period July 10 to 14, an absolute embargo was imposed on movement of all farm products out of the Philadelphia market district, as the result of the extremely dense flight of the beetles during that time. For the past several years there has been noted each year a distinct flight period, during which time the great proportion of the beetles seem to have an instinctive urge to fly. During this flight period beetles may be found in numbers on any kind of produce, as well as on other articles of commerce, and inspection is quite impractical. The only effective means of handling the situation is an absolute embargo on all items which can be handled under our law.



The enforcement of the quarantine provisions relating to the movement of nursery stock is of a tremendous importance, especially since a large portion of Pennsylvania's extensive nursery industry is located in the vicinity of Philadelphia. Within the quarantined area there are approximately 648 commercial greenhouses, nurseries and perennial plant growers in addition to many small retail establishments. The shipment of all plants or plant products and soil from these greenhouses and nurseries is under supervision and during the year 95,842 shipments of such stock were certified. There are 95 outdoor nurseries within the quarantined area having more than 3,000 acres of growing ornamental stock from which all shipments of plants were made under supervision. During the year approximately 36,000 plants with soil balls were treated and certified for shipment out of the area and over six million seedling plants and cuttings were certified for shipment without soil.

It is extremely important to make rigid supervision of nursery shipments in order that other states will accept stock from Japanese beetle area. At the present time, at least ten states require daily notification of all nursery stock shipped under certificate to their states, in order that re-inspection may be made at or upon arrival. It is extremely gratifying to note that there has not been a single instance so far as is known where any stage of the insect was found in a certified shipment upon arrival at its destination.

# European Corn Borer Control

The European corn borer has become established in northwestern Pennsylvania and must now be regarded as one of the most serious insect infestations within the State. This insect has been

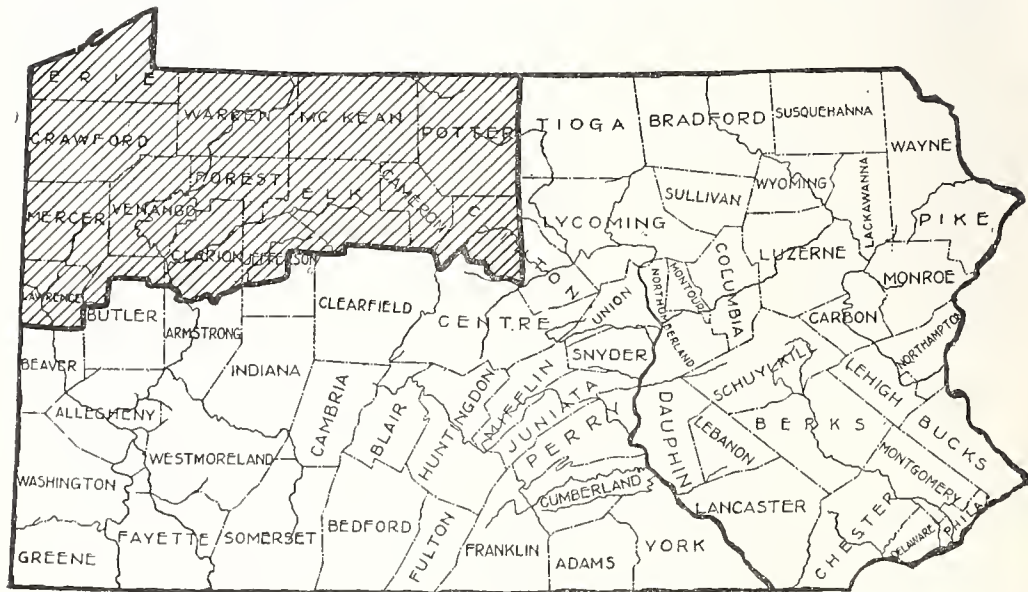


Fig. 7. Map showing area (Shaded) quarantined because of the European corn borer.

present in the State since 1919 and its spread was extremely limited until the season of 1925. Thorough scouting at the end of the 1924 season showed that the infested area comprised about 1,999 square

miles. The spread during the summer and fall of 1925, however, was very extensive and increased the infested area to a total of 9,841 square miles, comprising all or portions of 16 counties. So far as can be determined, the unusual spread in 1925 was due in part to a very favorable climatic and environmental condition in the Great Lakes region, coupled with the very heavy flight of moths across the lakes from Ontario. Not only did the actual area of infestation increase, but the intensity of infestation throughout the previously infested area likewise increased.

**Economic Importance.** The corn borer attacks field and sweet corn and has been known to cause a complete destruction of the crop in certain areas. An infestation of one larva per corn stalk may increase in one year to an infestation of 166 larvae per stalk. In some portions of the infested area in Pennsylvania, a heavier infestation than one larva per corn stalk is known to exist. In 1923, in Ontario, Canada, the average infestation was less than one



**Fig. 8.** Burning corn stalks in northwestern Pennsylvania to destroy the overwintering larvae of the European corn borer.

larvae per stalk and by 1925 there were many corn fields so badly infested that not a single bushel of corn was harvested. Such ravages give a sound basis for real alarm as to the control of the pest.

The control work is carried on in very close cooperation with the United States Department of Agriculture and is closely connected with the work in western New York, Ohio and Michigan. The field work in Pennsylvania is under the immediate supervision of a State Department employee who in turn is working with a Federal officer whose headquarters are at Cleveland, Ohio. It is hoped that by



the wide adoption of control measures and the general observance of regulations that the insect can be held down to a point where the commercial loss will not be serious.

**Scouting.** During the summer and fall of 1925 the infested area in Pennsylvania, as well as additional territory, was thoroughly scouted. This scouting covered 197 townships, including 2,658 individual fields and gardens and comprising a total acreage of 4,736 acres. A total of 100 of these townships was found to be infested.

**Quarantine Enforcement.** In the European corn borer quarantine, an absolute embargo is placed on the movement of corn and other carriers of the borer out of the area, no inspection or certification being allowed. Road inspectors were maintained at fixed points along the quarantine line. These patrols were maintained in most cases for 24 hours a day and the State police cooperated by lending a detail of four officers. During the quarantine season 266,029 vehicles were stopped for inspection from which 29,673 ears of corn were taken. Out of this number of ears, 1,181 were found to be actually infested with the insect.

General Bulletin No. 414 gives valuable information on control measures and the quarantine regulations for the corn borer.

### Oriental Fruit Moth, a Menace

The Oriental fruit moth, the first severe outbreak of which occurred in 1923, is proving a real menace to the commercial production of peaches, apples and quinces in the State. This insect was introduced into the United States probably on flowering cherry trees about 12 years ago. The pest is now found in peach orchards throughout southeastern Pennsylvania and causes heavy losses each year. The damage is caused in two ways: First, the larvae feed in the young shoots of the peach trees, killing them back and causing them to take on a bushy growth; second, the larvae feed in the fruit of the peach, quince and apple, causing a wormy product which is often not evident from the exterior.

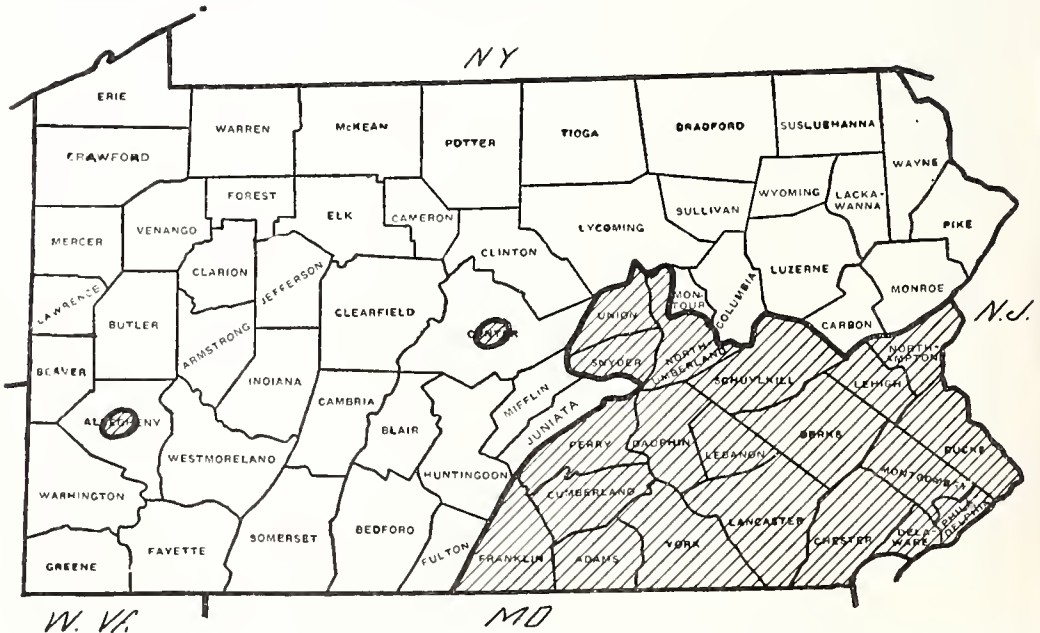


Fig. 9. Map showing the area in Pennsylvania infested by the Oriental fruit moth.



**Extensive Damage.** The Oriental fruit moth is especially destructive to the late peach crop. The survey of the infested area made during 1925 showed 10 per cent infestation of early peaches and practically 100 per cent in late peaches. Until the 1925 season, the insect was found only in southeastern Pennsylvania, but in 1925 the pest was found for the first time in the western part of the State, being located in a nursery near Pittsburgh.

The life history and other valuable information on this insect is contained in General Bulletin No. 405 of the Department.

Every effort is being made to develop an effective control measure. The fact that several generations of the insect appear each summer and that these generations overlap, giving all stages of the insect on the trees during late summer, makes it extremely difficult to perfect a satisfactory control. The life history of the insect, including such things as feeding habits, how attracted by baits and light of different kinds, range and time of flight, length of life of adults and effect of weather upon the activity of adults, is being studied in the hope of finding a basis for effective control.

**Parasites.** Considerable attention has also been given to the effectiveness of natural parasites as a control measure. Several hundred individuals of one species were brought in from the southern New Jersey area for releasement and study. In the southeastern part of New Jersey, in certain localities, practically every Oriental fruit moth larva was found to be attacked by this parasite, and for this reason the collections were made in an effort to introduce the species to southern Pennsylvania.

### Mexican Bean Beetle, A New Pest

This new insect has extended its area somewhat in the southwestern and western counties of the State. A survey was made covering all the counties to the west of and including Somerset,

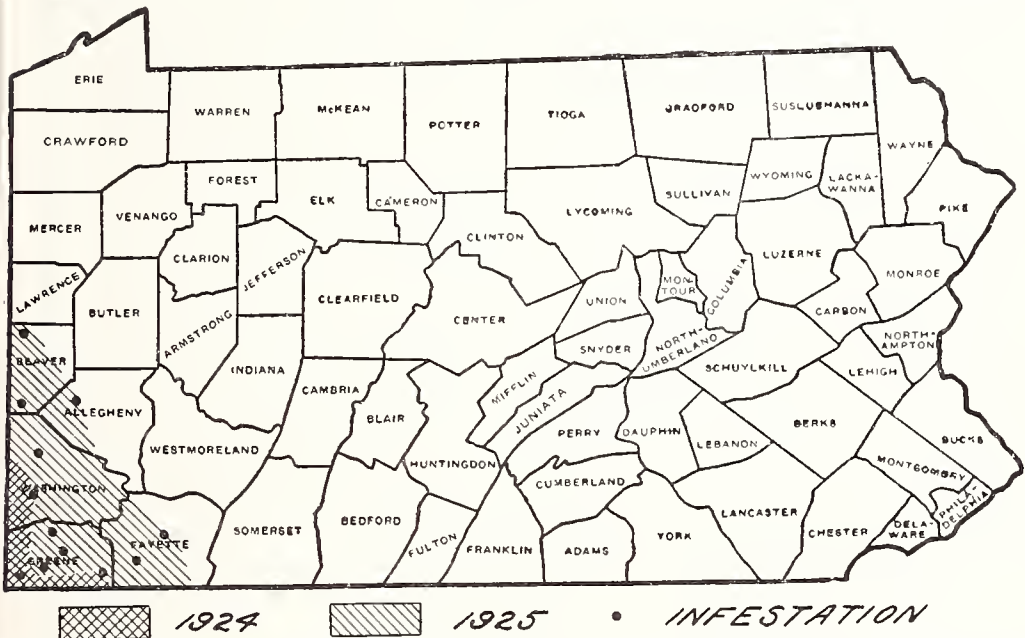


Fig. 10. Map Showing Distribution of the Mexican bean beetle in Pennsylvania.

Westmoreland, Armstrong, Venango, Crawford and Erie Counties, and the insect was found to be present at nine new points, the infested area now covering portions of Beaver, Allegheny and Fayette Counties, as well as Washington and Greene Counties. In general the spread has covered an area of approximately 20 miles in width to the eastward of the infested area of 1924, and the known infested area now comprises roughly 2,484 square miles.

This insect is known to be a pest of garden beans of all varieties, and is likely also to become a pest of soybeans and cow peas. Control measures and other information regarding this pest are contained in General Bulletin No. 417 of the Department.

### Insecticide Tests

The recent amendment to the Insecticide and Fungicide Act provides a means whereby tests of insecticides can conveniently be carried out, and the results of the tests used in connection with the registration and licensing of the materials. The enforcement of this act is of course delegated to the Bureau of Foods and Chemistry, but by arrangement the Bureau of Plant Industry carries on the field tests of such materials. A laboratory has been established at Rutherford and field plots provided for making these tests.

### Greenhouse Insects

The Greenhouse Laboratory at Willow Grove is utilized for the conduct of investigations on greenhouse-infesting insects. Extensive tests with the use of dry calcium cyanide for the fumigation of greenhouses were carried on, with the result that dosages of 1/8 to 1/4 of an ounce of this material to 1000 cubic feet of greenhouse space were found to be quite satisfactory. This method of control is described in detail in General Bulletin No. 413 of the Department.

### Angoumois Grain Moth Causes Heavy Loss

The Angoumois grain moth causes losses to the wheat growers in Pennsylvania amounting to many hundred thousand dollars each year. This loss continues in spite of fairly generally known effective control measures, including fumigating all stored grain with carbon bisulfide gas and hydrocyanic acid gas. This Bureau, at the request of the Bureau of Markets, fumigated seven large grain mills in different sections of the State during 1925 in order to demonstrate the method and promote its wider use in mills throughout the State. Additional information on the economic importance and control of this pest is contained in General Bulletin No. 393 of the Department.

Numerous studies of insect control measures have been carried out during the year at the various field laboratories of the Bureau. Splendid progress was made during the year in working out the control measures for the cherry maggot, the rose chafer, and the grape leaf hopper.

### Extensive Insect Collection Maintained

Thousands of inquiries regarding control of insects as well as identification of the less common species are received by the Bureau from all parts of the State. In order to facilitate identification, the

Bureau maintains an insect collection containing over 60,000 specimens. Special emphasis has been given during 1925 to the continued development of the economic insect collection.

### NURSERY INSPECTION

Nursery stock inspection, established by the State in 1901 for the purpose of preventing the introduction and spread of serious fruit and forest insects and diseases, has proven real life insurance for the horticultural industry of Pennsylvania. Without this service, numerous insects and diseases, which are menacing orchards and forests in neighboring states, would likely be adding to the present troubles of fruit growers in this State.

**Gypsy Moths.** As an example of special inspection of in-coming stock, to prevent possible infestation of Gypsy Moth, some 640 individual shipments of nursery stock from New England nurseries in 1923 were followed up and examined at their point of destination. The result of this work was the finding of Gypsy moth egg masses in three widely separated places in the State, in one case requiring the spraying of all neighboring trees with a heavy coating of arsenate of lead within a radius of 50 yards of each mass of eggs found. These points were inspected again in 1925 and no infestation was found. So far as is known, Pennsylvania is free of this insect today. The careful inspection and immediate control work have saved the State millions of dollars.

**Leopard Moth.** Inspections have revealed several plantings of nursery stock infested with the Leopard moth in eastern Pennsylvania. This insect is a serious pest of sugar maple in New England. The first importation of the insect into Pennsylvania was in 1918 near Morrisville. Two cases were found in 1924. In each instance, all infested nursery stock was destroyed immediately. The effectiveness of this inspection and control work is indicated by the fact that the State inspectors had no knowledge of any infestation in the State at the end of 1925.

**Work Extensive.** The job of inspecting nursery stock is a big one. This can be realized best when it is known that there are 318 nurseries in the State which cover 4,360 acres of growing stock, all of which must be inspected from two to four times annually. Furthermore, there are 39 injurious insects and diseases likely to be distributed on nursery stock. In 1925, 682 separate inspections of nursery stock were made, in addition to the inspection of 32 shipments of imported nursery stock containing 1,026,642 plants.

Non-resident as well as resident nurserymen are required to have licenses, and in order to further protect the purchaser and eliminate fraud, all nursery dealers and agents must likewise be licensed. In 1925, 625 non-resident nurseries, 124 nursery dealers and 2,886 agents were licensed to sell nursery stock in the State.



TABLE 15. Inspection and Licensing of Nurseries, Dealers and Agents, 1920-1925

	1920	1921	1922	1923	1924	1925
Resident Nurseries Licensed -----	201	228	256	264	314	318
Acreage of Pa. Nurseries Licensed -----	3,115	3,534	3,994	4,075	4,326	4,360
Non-Resident Nurseries Licensed -----	313	465	492	509	446	625
Number of Inspections Made -----	212	247	263	384	615	682
Number of Dealers Licensed -----	101	104	108	110	89	124
Agents Licensed to Sell Nursery Stock -----	1,642	1,910	2,152	2,401	2,740	2,886
Interstate Shipments Inspected -----	63	7	644*	15	6	2
Imported Plants Inspected -----				980,350	897,376	1,026,642

\*Unusual number due to unexpected development of Gypsy Moth in New England.

The inspection work shows that in general, Pennsylvania nurseries handle a very high grade of nursery stock. Only in a very few cases, has any extensive clean-up been required before a license could be issued.

## PLANT PATHOLOGY SECTION

### Potato Wart Control

Pennsylvania's potato industry was threatened by the introduction of the potato wart, a disease brought to America in 1912. This disease often causes a total loss of a crop since it reduces the potatoes to warty masses which are unfit for food. Up to the present time, it has been found in 11 counties of the State. In these counties, 813 gardens in 58 towns and villages are known to be infected. These counties include Armstrong, Bedford, Cambria, Carbon, Centre, Clearfield, Fulton, Huntingdon, Lackawanna, Luzerne and Schuylkill, with the most severe infections in Luzerne and Carbon counties. No new infections, however, have been found since 1922.

**The Quarantine.** The control work was started in 1918 and consists of the enforcement of a quarantine which prevents the movement of potatoes or other dangerous material from the infected area. Within

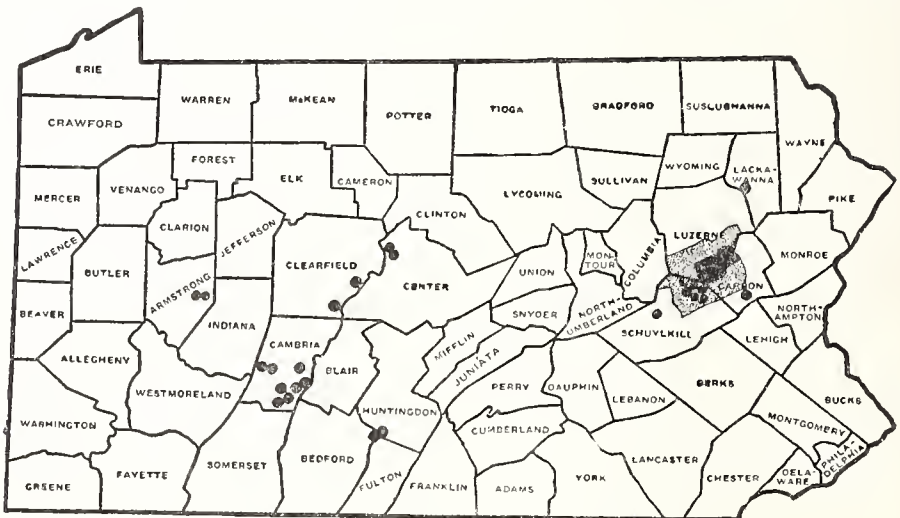


Fig. 11. Map of Pennsylvania showing location of all wart infections (black), and the safety zone (dotted). The towns shown by the black dots and the area shown in solid black are under strict quarantine.

the quarantine area only immune potatoes are allowed to be grown and only after a permit has been issued. Fortunately, there are no essentially potato growing districts located within the quarantined area and the disease is peculiar to gardens. Taking the quarantined area as a whole, only 5.2 per cent of the gardens have been found infected.

**No New Infections.** During the year an effort was made to resurvey the area outside the quarantined and safety zone area, in order to make sure that no new infections existed. The survey was carried on in Cambria, Centre, and Indiana Counties in the western area, and in Carbon, Lackawanna, Luzerne and Schuylkill Counties in the eastern area. The survey covered all or portions of 7 counties, including 56 townships, and comprising 737 gardens. No infections were found at any point. Of these 737 gardens inspected, 454 were found to be planted to susceptible varieties, and 283 to immune varieties of potatoes. This survey is of much practical interest in showing not only that no infection exists in this territory, but also in showing that a fair proportion of the gardens are already planted to immune varieties.

The result of the quarantine against potato wart gives each year a brighter hope that this bugbear of the potato may be starved out of existence by the continuous planting of immune varieties. Potato wart is described in detail in General Bulletin No. 394 of the Department.

### Peach Yellows Infection Greatly Reduced

Another disease project of great importance to the peach grower is that of the control of peach yellows. There are approximately 5,000,000 peach trees in the State. This makes the control of peach yellows of great economic importance because the disease not only actually destroys the trees but shortens the probable bearing life of the orchard.

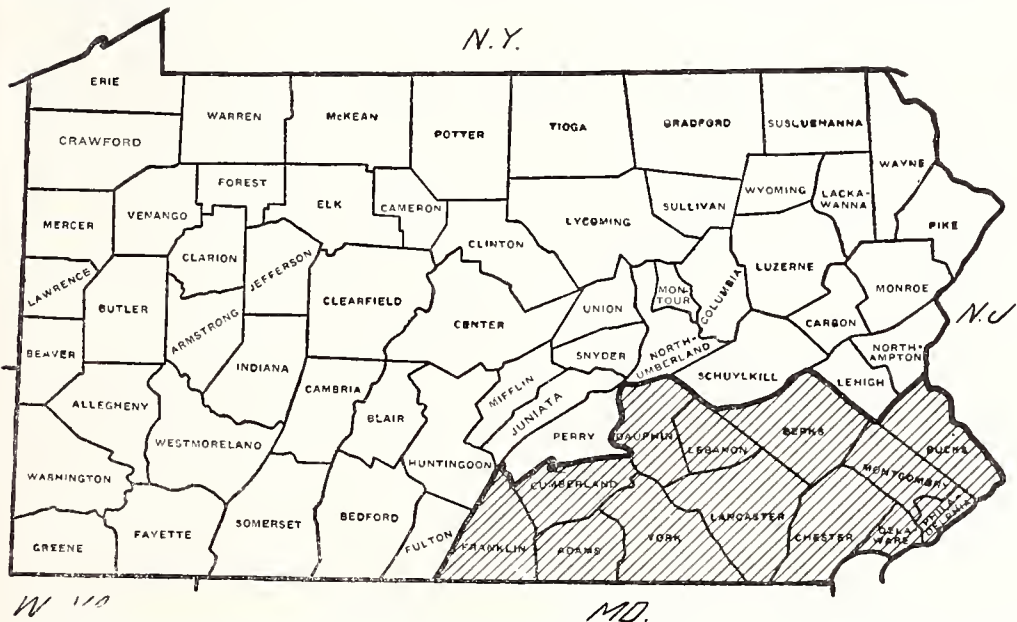


Fig. 12. Map showing the counties inspected for peach yellows in 1925.

**Few Diseased Trees.** The inspection for peach yellows and little peach was carried out during the year in practically the same territory as in the preceding year. The territory covered included York, Adams, Delaware, Lancaster, Chester, Bucks, Montgomery, Berks, Lebanon, Dauphin, Cumberland and Franklin Counties. In these counties, 408 peach orchards were inspected, containing 655,493 trees. Of this number of trees inspected, 2,326 were found to show symptoms of yellows and little peach and were marked for destruction. This is a very small proportion of the number of trees inspected, —0.35 per cent, or about 1 tree in 300. The trees marked by the inspector as showing yellows symptoms were taken out by the orchard owners and destroyed.

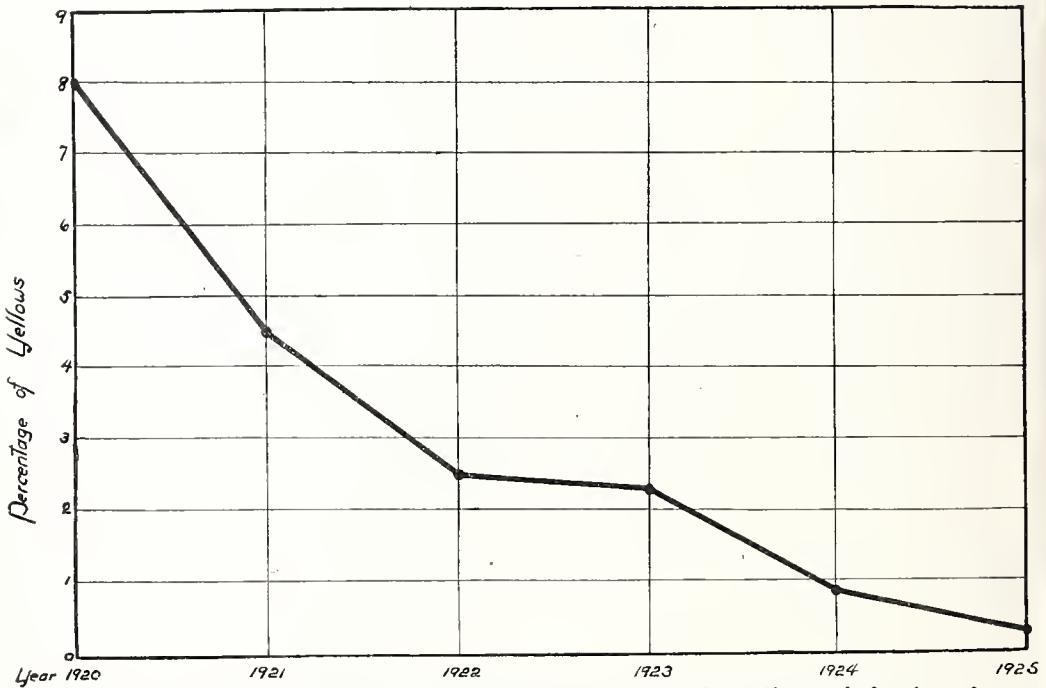


Fig. 13. This graph shows the reduction in peach yellows infection from eight per cent of all inspected trees in 1920 to less than half of one per cent in 1925.

Inspection records show a definite decrease in the amount of disease since 1921. In 1921, over 4.5 per cent of the trees were infected while in 1925, less than 1/2 of 1 per cent were diseased, as already stated. The accompanying table of inspection records indicates clearly this drop in the amount of disease since the inspection work was undertaken.

TABLE 16. Peach Yellows Inspection, 1921-1925

Year	Orchards Inspected	Trees Inspected	Diseased Trees Marked	Per cent of Yellows
1921	324	287,466	17,376	4.45
1922	422	442,507	11,052	2.50
1923	417	482,614	10,698	2.21
1924	456	674,102	6,064	.80
1925	408	655,493	2,326	.35

**Economic Importance.** Comparing the number of infected trees in 1921, namely 17,376, and considering this as a normal loss at that time, with the 1925 figure of 2,326 infected trees found, and con-



sidering this as the present average, it may be said that there has been a saving of over 15,000 peach trees to the growers of the State. If we take as a conservative valuation \$5.00 per tree, it is possible to estimate a saving from this work to the peach growers of the southern half of the State of \$75,000.

### Spread of White Pine Blister Rust Checked

The white pine blister rust, a disease which is extremely destructive to young, white 5-needle pines, was first discovered in Pennsylvania in 1921 in the northern part of Wayne County. The disease is firmly established in New York and the New England States and everything possible has been done to check its southern spread into Pennsylvania. The disease works in the bark and twigs of the branches of the pine, causing a girdling of the tree. It soon kills young trees, but affects older trees more slowly. The rust does not spread from one pine to another, but must come from the alternate hosts, the currants and gooseberries (*Ribes spp.*). Consequently, the most effective control is the removal of currants and gooseberries from the immediate neighborhood of pine. More details regarding this disease are published in General Bulletin No. 426 of the Department.

**Survey Made.** A survey was made in 1925 to determine whether blister rust actually occurred on any of the *Ribes* hosts in the northern tier counties, and all black currants were examined with particular care. No case of blister rust was found outside of Wayne County, and in Wayne County it was found at only four points, of which three were known to exist as early as 1922 or earlier. The new location at Louella, east of Honesdale, is very slight, and increases the southern limit of the known infected area by only a very few miles. In two other cases no rust was found on *Ribes* where it had been known to exist in 1921 and 1922.

A summary of the season's work indicates that there has been but little if any spread of the disease southward since 1922, and that the extremely irregular and limited occurrence of wild *Ribes*, together with the limited known area of actual infection, shows that the disease is not of relatively high importance at the present time in the State.

### Cedar Rust Menace Curbed

The removal of red cedar in the southern-tier counties as a means of eradicating the cedar rust from apple orchards has been continued by the Bureau in 1925. In the past red cedars have been responsible for considerable damage in apple orchards where the rusting of the fruit has reduced its commercial value. Progress in the removal of red cedar has reached a point where cedar rust is no longer a serious menace to apple production in the commercial belt of the State.

### Potato Seed Certification

Potato seed certification is still another constructive line of work conducted by the Bureau. The object of this certification work is to make available for growers dependable sources of disease free seed adapted to Pennsylvania conditions.

In 1925, the certification work was carried on in six counties. In general, the same plan has been followed as in previous years, but a notable difference is that for the first time the final grading before shipment of the potatoes was carried on under the supervision of the Bureau, rather than left to the owner as heretofore. This change was made necessary by reason of the fact that a number of shippers the previous year failed to grade in a satisfactory manner on their own initiative.

One new county entered the ranks of certified seed producing counties during the year, namely, Erie County, and one county discontinued the production of certified seed, although still producing seed potatoes. During the year 69 growers entered fields for certification, comprising 186 1/2 acres; of this number 43 growers passed the final inspection, with an acreage of 100.8 acres; 11,465 bushels of white rural and 14,500 bushels of russet rural potatoes were certified, a total of 25,965 bushels.

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## BUREAU OF STATISTICS

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### MONTHLY CROP REPORTING SERVICE

For ten years the Bureau of Statistics gathered, compiled and published monthly crop reports which contained information relative to the acreage, production and value of the principal farm crops, as well as estimates during the growing season based on the condition or outlook. Two years ago, in line with other agricultural states, our Department entered into an agreement with the Federal Department. Under the provisions of this agreement a joint monthly crop report is made. The merger of the two departments in this important work provides greater efficiency, saves in expense and prevents needless duplication of work.

**Many Crop Reporters.** A total of 850 crop reporters living on farms throughout Pennsylvania submit monthly reports on crop and live-stock conditions in their respective localities. In addition, the Bureau maintains special lists of commercial apple growers, commercial grape growers, potato growers, tobacco growers and maple sugar producers to which schedules are sent from time to time for important information. From the reports received by the Bureau, a regular monthly crop report is issued in addition to special timely reports on intentions to plant, potato stocks on hand, the commercial apple crop and the commercial grape crop.

### STATE TRIENNIAL FARM CENSUS

Under the provisions of the Act of 1921, the first State Triennial Farm Census was gathered in the autumn of 1924 and tabulated early in 1925. This information was gathered by the township and borough assessors in 1924 when making the triennial assessment for county purposes. The County Commissioners and Assessors in general

showed splendid cooperation. The service of the Assessors was paid for by the counties. Similar reports are gathered by the Assessors of many other agricultural states, not only every three years, but annually. This report contains information relating to the number of farms, farm population, farm acreage, acreage of the principal crops, livestock on the farms, and farm equipment and conveniences. This information is now being used by the agricultural interests of this State in many ways for the advancement of farm industry in its different phases.

It is probably not out of place to say that the taking of the first triennial farm census was new to all concerned. It shows some places where the information called for is not complete, but taken as a whole, it is a splendid piece of work. It is hoped that the value of this census will become generally recognized and that all agencies will cooperate to make the next census thorough and complete.

**Requests for Information.** Almost daily requests are coming to the Bureau for statistical information relating to the different phases of farm life. The triennial farm census has yielded a vast quantity of facts which the Bureau constantly refers to in supplying desired information.

For example, a county agent in one of the western counties wanted to make a survey of the sheep industry of his county. We were able to furnish him a list of the sheep farmers of his county. In another instance a concern was contemplating the locating of a creamery in a certain locality and upon request we were able to tell approximately the number of dairy cattle in that section.

The information on file in this Bureau can be and is used in many different ways for the encouragement and advancement of agriculture in the Keystone State.

### RELIABLE STATISTICS VITAL

The value of reliable statistics relating to agriculture is apparent to all successful and wide-awake farmers, farm organizations and others engaged in allied industries. Accurate and complete statistics are important in any great industry. They are extremely important to people interested in rural life, and especially those charged with the responsibility of aiding, by legislative and administrative processes, the successful development of a great agricultural industry. Suggestions as to the trends of acreage and yields of important crops over a period of years and plans to improve marketing and distribution wait upon them, and in any national crisis they are essential to the intelligent handling of the Nation's food problems.

**Value of Reports.** Crop reports are necessary to facilitate the operation of the law of supply and demand, prevent undue fluctuation in price, check the effects of misleading reports and provide the farmer with the same information as the middleman in order that he may have equal chance. Through accurate crop reports only can the farmer hope to secure prices that are justified by supply and demand. Such reports as those showing farmers' intentions to plant are a great aid to farmers in determining acreage to plant.



Having available statistics on potato production in Pennsylvania and other important producing states, proved especially valuable to both producers and consumers in the fall of 1925. Knowing that the crop was below the usual figure in competing states and the country at large, the Pennsylvania growers with one of the best crops in the history of the State, were able to hold and market their potatoes to the best advantage. Consumers on the other hand were given the opportunity to foresee the condition and buy potatoes early at a more reasonable figure than that prevailing during the winter months.

### STATISTICAL RECORDS SHOW TRENDS

Statistics are extremely important from the historical standpoint since they are the only way to determine long-time trends in production. For example, Table 17 gives for six important Pennsylvania crops the average acreage, yield per acre and prices by five-year periods from the time of the Civil War. These data very definitely reveal changes that have occurred in the production of these crops during the last 60 years. Increases in the acre yields of corn, wheat and potatoes are among the significant facts disclosed by a study of these records. Such progress in the efficient production of food products is substantial evidence of the value of modern improved methods. It will likewise be noted that no extensive changes have been made in the acreages of these important crops during the past 40 years, indicating the stability of Pennsylvania's well diversified agriculture.

### ACRE YIELDS OF POTATOES IN PENNSYLVANIA

TEN-YEAR MOVING AVERAGE - 1866 TO 1925

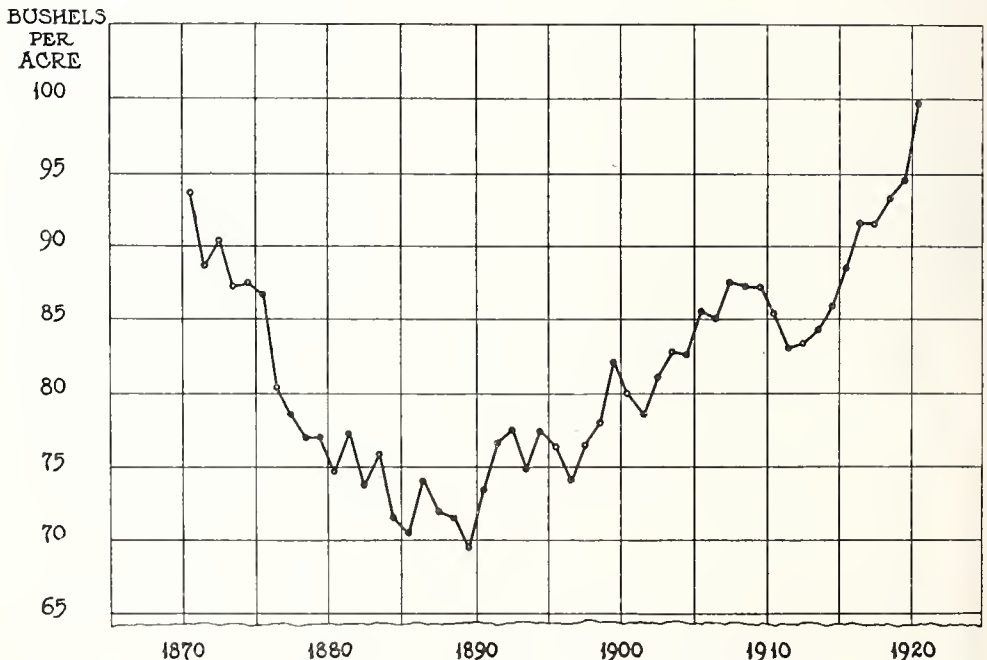


Fig. 14. This chart shows the trend in acre yields of potatoes since 1866. Note the gradual decrease up to approximately 1890 and the rapid and constant increase since 1915.

**Potato Yields Increasing.** A study of the acre yields of potatoes since the Civil War (See Fig. 14) shows a very pronounced decline during the 30 years following the war and then a gradual increase in yield to approximately 100 bushels for the last decade. Various factors contributed to the decline from 1866 to 1895, among which were the increasing menace of insects and diseases and declining prices during that period. The increase in acre yield since 1895 is no doubt due to several factors, among them being improved seed strains and varieties, and the control of diseases and insects by the use of disease-free seed and better spraying methods and equipment. With this successful control has also come better care and management and especially more fertilization.

**TABLE 17. Average Acreages, Acre Yields and Prices for Five-year Periods, 1866 to 1925**

TAME HAY				CORN		
Period	Acreage	Tons per Acre	Price per Ton	Acreage	Bus. per Acre	Price per Bu.
1866 - 1870	1,849,200	1.31	\$11.47	986,400	33.8	\$0.72
1871 - 1875	2,147,000	1.06	16.98	1,092,800	36.6	.59
1876 - 1880	2,523,500	1.28	11.29	1,271,700	35.8	.51
1881 - 1885	2,711,700	1.14	12.23	1,397,000	29.4	.62
1886 - 1890	2,976,100	1.21	9.94	1,399,400	30.0	.50
1891 - 1895	3,063,500	1.10	11.98	1,308,500	30.8	.52
1896 - 1900	2,558,400	1.25	10.61	1,269,200	34.0	.38
1901 - 1905	3,072,700	1.32	12.89	1,453,900	35.0	.58
1906 - 1910	3,083,400	1.34	14.12	1,423,200	36.7	.63
1911 - 1915	3,115,400	1.29	15.90	1,466,000	41.4	.69
1916 - 1920	2,992,800	1.46	20.12	1,526,300	42.1	1.31
1921 - 1925	3,004,000	1.37	16.83	1,488,000	44.0	.80

WINTER WHEAT				WHITE POTATOES		
Period	Acreage	Bus. per Acre	Price per Bu.	Acreage	Bus. per Acre	Price per Bu.
1866 - 1870	1,178,500	12.6	\$ 1.40	145,600	90.2	\$0.61
1871 - 1875	1,117,700	14.0	1.27	113,100	97.2	.54
1876 - 1880	1,445,000	14.3	1.16	155,800	77.3	.50
1881 - 1885	1,485,000	12.6	1.06	193,000	73.5	.53
1886 - 1890	1,387,600	12.0	.92	196,100	67.9	.55
1891 - 1895	1,268,500	15.1	.74	202,200	79.3	.48
1896 - 1900	1,440,400	15.7	.76	180,700	74.5	.45
1901 - 1905	1,616,700	16.0	.83	247,600	86.8	.62
1906 - 1910	1,476,700	18.1	.94	265,800	84.8	.4
1911 - 1915	1,291,400	17.0	.98	269,600	85.8	.70
1916 - 1920	1,403,400	17.5	1.94	269,600	90.7	1.41
1921 - 1925	1,243,800	18.3	1.19	235,200	107.1	1.16

OATS				TOBACCO		
Period	Acreage	Bus. per Acre	Price per Bu.	Acreage	Lbs. per Acre	Price per Lb.
1866 - 1870	1,608,700	31.3	\$ 0.42	5,300	836	\$0.102
1871 - 1875	1,037,400	29.3	.42	9,500	1,259	.115
1876 - 1880	1,148,600	31.6	.32	19,700	1,278	.095
1881 - 1885	1,258,400	28.7	.41	28,200	1,160	.117
1886 - 1890	1,314,400	24.8	.35	26,000	1,239	.128
1891 - 1895	1,177,300	26.6	.35	24,200	1,144	.121
1896 - 1900	1,172,900	29.3	.28	18,800	1,337	.074
1901 - 1905	1,204,700	30.2	.37	16,300	1,373	.077
1906 - 1910	1,091,000	28.8	.47	34,400	1,311	.098
1911 - 1915	1,117,400	32.1	.46	38,700	1,376	.087
1916 - 1920	1,175,200	35.1	.72	41,800	1,398	.173
1921 - 1925	1,160,200	32.4	.52	43,400	1,358	.143

It will be noticed that there has been a rapid and constant increase in potato yields since 1915. This increasing yield per acre accompanied by relatively low costs places Pennsylvania in an excellent position to successfully compete with other states in potato production. This is especially significant since the State does not produce nearly as many potatoes as are consumed within its borders.

### STATE HAS DIVERSIFIED AGRICULTURE

Pennsylvania is a state of diversified farming. The farmers of this State do not depend on a single crop like corn and wheat farmers of the central west and cotton farmers of the South, but grow many different crops. If there is a shortage in one, it is usually made up in some other. This is a point which is well worth considering in Pennsylvania agriculture.

**Crops.** Pennsylvania ranked seventh among the forty-eight states in the value of its agricultural products in 1921. In 1925 this State ranked fourteenth. The value of the eleven leading crops was estimated as follows: Wheat, \$33,398,000; corn, \$57,977,000; rye, \$2,017,000; oats, \$20,474,000; buckwheat, \$4,416,000; potatoes, \$49,394,000; tobacco, \$5,970,000; tame hay, \$72,658,000; apples, \$10,176,000; peaches, \$1,440,000; pears, \$725,000.

The estimated value of all agricultural products was \$300,226,000, compared with \$409,968,877 for the year 1919, as shown by the fourteenth census. The average value of all farm crops for each of the 200,443 farms was approximately \$1,500. The value of milk, eggs, wool, and honey was estimated at \$129,037,000, or an average of about \$645 for each farm in the State.

**Livestock.** The importance with which farmers regard livestock in the success of their business is indicated by the fact that practically every farm in the State has some form of livestock present. More than four of every five farms have cattle, three of every four have swine and nine of every ten have poultry. Furthermore, the crops from 80 per cent of the improved farm land of the State are consumed by livestock. In addition to showing the importance of livestock, these facts reveal the need for livestock of good breeding and free from diseases and parasites.

The estimated value of the livestock, including chickens and bees in 1925, was as follows: Horses, \$39,693,000; mules, \$6,226,000; cattle, \$80,038,000; sheep, \$4,918,000; swine, \$13,813,000; chickens, \$22,007,000; bees, \$771,000; total, \$167,466,000.

**Farm Improvements.** The diversified type of agriculture including both crops and live stock has resulted, not only in a more stable farming unit, but has also brought about a more substantial type of farmstead in which modern conveniences play a central role. While progress along this line has been made for several decades, the Bureau's estimates show particular advancement since 1920:



	1920	1925	% Increase or Decrease
Automobiles -----	104,850	159,974	+ 52
Motor Trucks -----	10,250	29,819	+191
Tractors -----	6,823	21,065	+209
Silos, -----	41,568	60,618	+ 46
Gas engines -----	54,607	85,739	+ 57
Telephones -----	115,282	125,040	+ 8
Cream Separators -----	78,877	64,012	- 19
Electric Service, (1921) -----	8,495	26,246	+209
Radios -----		18,225*	
Running Water -----		29,014*	
Bathrooms -----		22,889*	
Heating Systems -----		39,539*	

\*No previous data available for comparison.

## DIRECTORY OF FAIRS AND FARM ORGANIZATIONS

The Bureau has for many years gathered statistical information relating to various fairs with dates and places of these annual exhibits, and published the same in bulletin form for general distribution. These data have been largely sought and are a splendid medium for advertising the annual event of these organizations. Reports on file show that in 1925 forty-three associations out of about eighty in the State, had a total attendance of 1,461,227; amount received from paid admissions, \$483,536.80; total receipts from all sources, \$1,055,504.05; amount of premiums paid, \$186,510.68 and total amount of expenses, exclusive of premiums, \$891,209.83

In 1925, a directory of county and state agricultural organizations was added to this bulletin for the first time. All countywide organizations, the Statewide farm organizations and the associations closely related to agriculture were included. This makes the publication a handy reference bulletin as is evidenced by the fact that it is in demand throughout the State.

